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I.—*Botanico-Agricultural account of the protected Sikh States.* By
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The extensive territory under the *Ambala* political agency comprises the hill states of *Sirmur*, *Kahlur*, and a portion of the plains principally possessed by Sikh chiefs, bounded by the above states to the north-east, the *Sutlej* to the north and north-west, the *Jumna* to the east, and the *Delhi* territory and *Bhatiana* to the south.

It is not my intention to treat of the hill Rajpoot principalities, as I am only very partially acquainted with but one of them (*Sirmur*); but solely of the “protected Sikh states” in the plains.

This tract of country may be divided into three great divisions, besides the narrow strip of *khádír* land adjoining the *Jumna* and *Sutlej* according to their most abundant natural products, viz., the *dakh* the *bábúl* and the *phalahi*.

I. The first of these, or *dakh* tract, extends from the high bank above the *Jumna*, which in most places adjoins the *Shah Nahr* to the *Linda* river, a small stream not noted in the exceedingly inaccurate maps* of this part of the country, which runs nearly parallel with the *Markhanda* at a distance of two to five miles from it, and ultimately unites with the *Sarasvatí* a little below *Thanesar*. This tract of country is generally high and called *bangar*, which term however is more universally applied to the southern extremity, and not commonly to the

* I allude to the large maps published under the style of ‘Trigonometrical survey,’ though this part of the country has never been surveyed trigonometrically or otherwise; to give an instance, *Kotaha* or *Syyed ka garhi*, is divided into three places, viz. *Kotaha* or *Syyed*, and *ka garhi*!!! at a considerable distance one from the other.

more northern and narrow part except in contra-distinction to the *khádir* in the immediate neighbourhood, to which my present observations more particularly apply, as I have never visited the more southern region. The most abundant natural product is the *dakh*, (*Butea frondosa*), which springs up wherever the land is not cultivated, and in many places (especially towards *Kaithal* and *Jind*) covers vast tracts of country which might be rendered most productive.

The flora of these jangals presents several features in common with that of the *Dhún*, such as species of *Vitis*, *Dioscorea*, *Gloriosa*, *Asparagus*, *Costus* and *Zingiber*.

This tract is intersected by the rivers *Sarasvati*, *Chitang*, and *Rakshasi* a branch of the latter; from these canals in all directions formerly existed and in a few instances have been lately re-opened, but they are generally overgrown with jangal. These three streams as well as a smaller one which joins the *Jumna* near *Buria*, all rise near one another in the high ridge above the *khádir* which skirts the *Sewálíks*, in the neighbourhood of *Chichrauli* and *Biláspur*, and are partially supplied in the upper part of their course from springs, but the water from that source is quickly expended in irrigation and they are mainly dependent on rain. They are all characterised by excessive tortuousness of course, and owing to the great perpendicular depth of their banks, are exceedingly dangerous from sudden floods after heavy rain.

The soil is, generally speaking, tolerably rich; and in favorable seasons produces very fine crops, but, in parts of it, is exceedingly poor and scarcely worth the trouble of cultivating.

The usual crops in the *Kharif* are rice, which is pretty extensively cultivated in lands liable to be overflowed, and on higher ground cotton, maize, joar, and a very small quantity of bajra, mandiya*, kodon and chini. *San*. *Hibiscus cannabinus* is generally sown round cotton or pulse fields, while the beautiful *sani* (*Crotalaria juncea*) is sown in extensive fields by itself. The oil seeds *turia* (*Sinapis glauca*) and *til* (*sesamum*), both the white and purple-flowered varieties are sown, the former more sparingly and in richer soils is cut late in November or early in December; the latter is extensively cultivated both by itself and mixed with various *phaseoli*, such as *urud*, *moth*, *lubia*, &c., on higher

* It is as well here to remark a mistake I observed in Lieut. HUTTON'S account of his tour to the *Borenda* pass in your journal; he mentions the fields of *kodon* in the hills, but erroneously gives it the name of *Paspalum scrobiculatum*, which plant though called *kodon* in the plains is not cultivated in the hills: what the hill men term *kodon* is the *mandeea* of the plains or *Eleusine corocana*.

and drier soils. All these crops suffer severely from the depredations of a hairy caterpillar called *kamli* of the genus *Sericaria*.

In the *rabi*, wheat and barley form the principal crops, gram not extensively and generally mixed with either of the above, and *masur* (*Ervum lens*) very little cultivated; *sarson* (*Sinapis dichotoma*) is sown to a considerable extent, generally mixed with barley. The poppy is a valuable but very precarious crop, it is extensively cultivated in rich irrigable lands, and when not destroyed by hail, which is too often the case, amply repays the labor expended on it. The land is ploughed three times, being plentifully watered between each ploughing, before sowing; and subsequently the plant is kept continually irrigated till the fruit is formed. The opium is collected in the usual way, by women and children, an incision being made in the head by a three-pronged instrument. The heads are kept and sold, the seeds for oil as well as an agreeable food, remarkably refreshing during fatigue and abstinence; with the exception of what is sold in the neighbourhood the opium is sent to the westward where the poppy is not cultivated for it, for the use of the Sikhs who are immoderately fond of it and consume immense quantities. Tobacco is not much cultivated.

II. The *Babul* country. This tract extends from the *Markhanda* (the narrow slip between that river and the *Linda* being intermediate in its character), to the high ground between the river called in the map "*Khanpur kí naddi*" and the most western branch of the *Ghaghar*. It is intersected with numerous streams rising either in the outer range of hills as the *Ghaghar*, *Markhanda*, *Begana*, *Baliala*, *Tangrie* and *Rhone*, or in the high ridge which separates the tract from the *Sabcoline Khadir* as the *Ombla*, *Charmari* and other nameless streams enjoying the generic name of *chhoa* when depending on rain, or *ogal* when fed by small springs. The soil is generally sandy and salt, which latter characteristic is shown by the abundance of *fras* (*Tamarix faras*) which will flourish only in such a soil. The *bábúl* or *kikar* (*Acacia arabica*) is the natural product, every where springing up and often forming extensive groves. The general appearance of this tract is pretty, the level of the plains being frequently diversified by gentle slopes towards the numerous rivers and their tributary ravines.

The horizon is generally bounded by groves of *bábúl* trees, which are also abundantly scattered through the fields. But what gives a peculiar feature to a considerable portion of the country, especially between *Ambálá* and *Patiála*, are the numerous hedge-rows of *fras*, which near the villages often form beautiful shady lanes, reminding one of English scenery. This very useful tree is planted from cuttings about a foot

long; they are covered at the top with cowdung to prevent the moisture from rotting the wood, and are planted in little banks raised along the edges of the field or road, at the first commencement of the rainy season; in a week or two they begin to sprout and by the following year are frequently six or seven feet high, and in seven or eight years form middling-sized trees. From each cutting there are usually several stems, and as soon as any of these have attained a sufficient size to render them available for small rafters, ploughs or other agricultural implements, they are felled, the smaller ones, if any, being left, if not the root soon throws out a new crop for a future supply.

They rejoice especially in sandy and somewhat saline soil and it is remarkable that in dry weather the outside of the leaves is always covered with a saline efflorescence invisible to the eye but very perceptible to the taste, but this is not observable in the leaf itself, which is tasteless. Probably in consequence of the quantity of salt in the wood, it cannot be used as fuel in a room from the intolerable fumes it gives out.

A great portion of this tract is very low, especially that part between the numerous branches of the *Ghaghar*, and is cultivated with rice in the *kharif* and gram in the *rabi*. *Joar* is even less cultivated than in the first tract, and *bajra* scarcely ever seen, both being sown principally for the sake of the fodder.

The rest of the *kharif* crops are the same as those in the first tract, except that *mandua*, and *til* are not so much cultivated, and I have not observed *kodon* in it at all. In the *rabi*, wheat and barley are the principal crops, but gram and *masur* are abundant in the lower lands of stiffer soil. *Surson* is very abundant either alone or mixed with grain, as is flax like it cultivated for the sake of its oil. The *Raphanus raphanistrum*, called *tarámíra*, is also cultivated generally among the stubble of the *cotton* for a coarse oil yielded by it: it is exceedingly hardy and never suffers from the frost which frequently destroys the *surson* crop.

Mehndi (*Lawsonia inermis*) is cultivated in a few villages by a peculiar caste called **maghs* in the following manner.

* This is the only caste who cultivate this crop, and they give the following strange account of their origin: Once upon a time there was a Sarsut brahmin, king of Mecca (who was maternal grand-father of MUHAMMAD!) his name was RÁJA MUKHTASUR.

From him sprung SAHARIYA who with his son SAL was turned out of Arabia by HOSSAN and HOSSYN. Thence they migrated to *Pundri* an island, and thence to *Mahmúdsur* in the *Barara mulk* W. of *Bhatinda*, where they colonized

The seed is soaked in water for three days, then strained and again soaked till the radicle begins to sprout. The seed beds are about three feet wide and twelve or fourteen long, from north to south, so that they may be sheltered by hurdles from the prevailing winds (west or east). In each bed about half seer pukka, of seed prepared as above, is sown, and is sufficient to sow from half to two bigas kucha according to the growth.

After sowing the germinating seed they are daily watered in the evening till they sprout above ground which is generally the third or fourth day. Sown in Chyt, it is transplanted as soon as there has been a good fall of rain in Asarh or Sráwan into fields, and watered as soon as planted, and subsequently every ten or twelve days as may be found necessary. It is ready for cutting the following Jeth, and again in Mangsir, again in Bysakh and then in A'san, and so on. After the first annual cutting it is well manured and watered, but after the autunnal one it is left alone till the *Huli* when it is again manured to be ready for cutting the following month. Thus treated it will continue to be productive for ten or twelve years.

When cut, the leaves are beaten off the twigs, and about a pukka mun is produced from a kucha biga, and is sold at the rate of six to fifteen seers a rupee.

Towards the foot of the hills, *kulti* (*Dolichos uniflorus*), and the *sáwank* (*Panicum frumentaceum*), are moderately cultivated*.

In both these tracts the sugar-cane is cultivated extensively, but in a very careless way. It is sown in March or the end of February as soon as the frosts have ceased, in large fields, not in lines or with any regularity, and is generally surrounded with a hedge of *ticar*, (*Cajanus bicolor*), which is sown when the canes are set. The only care taken is to prepare the ground by frequent ploughings and a quantity of manure depending on the supply from the village sweepings and the laziness or activity of the cultivators. On the first fall of rain after the young plants begin to sprout (in the end of March or April) the caked surface of the ground is broken either by means of a wooden mallet or a small hoe. The cane is seldom irrigated, never unless when a small canal (*khál*) from one of the torrents, or *ogals* passes near them and consequently the crop is almost entirely dependent on the rains. It is 17 villages. Thence they were driven forth, and after sundry migrations are now settled in the following places:—

1 Chaurira; 2 Irágarh, near Patiála; 3 Yára, near Shahábád; 4 Indri; 5 Thánesar; 6 Deorána, near Ambála; 7 Mustafábád; 8 Sádhoura; in the Sikh states. And Lakhnauti in the *Mozaffarnagar* district.

* Both of these are extensively cultivated in the hills.

seldom fit for cutting before the end of December by which time the frost sets in and materially deteriorates the quality of the juice, often even entirely destroying the cane and rendering it useless for any thing but indifferent fodder for the cattle and bad seed for the ensuing year. The cane is even in the best years very poor, and seldom is more than six or seven feet long and three fingers thick ; but as the very worst is always kept for seed it is not wonderful that it should have deteriorated. The only wonder is, that it should be considered worth the trouble of cultivating at all in such a way. The cane is cut from the field by sickles and carried entire to the *kolú* or sugar-mill, which is generally situated in the *gohar* or space surrounding the village. I have here never observed it at a distance from the village (as is usual in some parts of the country), except when a river intervene ; then it is chopped into little bits and pressed in the *kolú*, the mash from which the juice has been expressed, with the leaves, being used as fuel to heat the sugar boilers. The village cattle are allowed however to help themselves *ad libitum* from the heap. The tall column of dark smoke from the *kolús* with the delicious fragrance of the boiling juice, greet one from almost every village from the end of December to the middle of February, by which time the work is generally quite over, though sometimes it is continued till late in March, when the crop is unusually abundant.

In garden fields near town, species of the *cucurbitaceæ* and *arums*, with the sweet-potatoe and baigan, capsicum, methi (*Trigonella fœnum græcum*) and radish (both as a vegetable made of the young pods and for oil) are generally cultivated.

The best grasses in this region are, after the *dhub* grass, which is abundant, the *dhaman* (*cenchri* and *penniseti*, *spp.*) the *palwán* (*Andropogon pertusum*, *bladhii* and *scandens*) from the jangals, and from the fields in the rains the annual species called *jangli chini* and *sawank*, *Panicum colonum*, *brizoides*, *hirsutum*, &c. are cut in quantities for the cattle. The large *birs* or preserves for hay kept by the Sikh chiefs consist chiefly of the spear grass (*Andropogon contortum*) with the *palwán* and *dohamans*, and the coarser kinds *Poa cristata*, *Andropogon muricatum* (*dhabri* and *senth*) with the coarser *sacchara*, cover considerable tracts in the *dhak* region and are useful for thatching. The small *Perotis latifolia* and *Imperata cylindrica* form the first coating to the sandy channels of torrents deserted by the stream which are not unfrequent, but they are of little value and only used when no other grass is procurable. The *bavú*, a species of *andropogon*, is considered poisonous.

The population of these two tracts is mostly Hindu, but among the zemindars and lower castes there is a considerable sprinkling of Musalmáns, Rajpúts, both Hindu and Musalmán, but principally the latter, and Jats are the commonest classes among the zemindars ; but Rors, a caste I believe peculiar to this part of India, are not uncommon among the cultivators. Musalmán *mális* are the best. The Sikh persuasion is not common among the Jat zemindars, but confined to the invading chiefs from the other side of the *Sutlej*, but it is not unusual for sweepers and chamars to adopt that faith under the name of Rangrethas and Rámdásias. About one-third of the kahars are Musalmáns, which proportion becomes larger as we advance westward towards *Lodihana* and the *Panjáb*. A Musalmán tribe *Gagra* replace the sweeper caste in the charge of leeches.

III. The *Phalahi* tract. This extending westward from my second division, is bounded on the north by the *Sutlej* low land or *Bhet* ; to the south by *Bhatiana*, while towards the west I am not acquainted with its limits or the nature of the countries that succeed it (if different) towards *Firozpur*. It may be divided into two great subdivisions, the *Phalahi* proper and the *Jhand*.

In the first of these water is found tolerably near the surface (30 to 80 feet), so that wells for irrigation are abundant ; in drawing water the lao or bag pulley and inclined plane is in almost exclusive use, the Persian wheel or harat being very seldom seen, and the depth of the water from the surface entirely precluding the use of the *dhenki* which is not rare in the preceding tracts.

The *phalahi*, *Acacia modesta*—WALL., from which I have distinguished this tract, is a small tree about the same size as the *bábúl* but very different in appearance, being very scraggy and armed all over with sharp hooked prickles. It is deciduous and when the leaves first appear in March remarkably beautiful, the delicate foliage being of the most brilliant light green and set off by the bunches of long cylindrical spikes of white flowers diffusing a delightful perfume through the air ; but its beauty is very transitory, the flowers soon fade and the leaves assume a dreary glaucous hue and fall early in winter, leaving the tree covered with the compressed yellowish pods. The wood is very hard and heavy, of a dark brown color, and is much used for a variety of economical purposes. It grows abundantly in all waste places. In this tract the *Chamror*, *Ehretia laevis*, again appears, being abundant at the foot of the Sewaliks but very rare in the *bábúl* tract : it also is much valued for the hardness of its wood.

Sugar-cane is only cultivated in the most northern part of this tract,

but where grown is eminently successful, being cultivated with much more care than in those parts that I have previously mentioned, and kept constantly irrigated. The juice is expressed in the kulhari or roller sugar-mill, of which I formerly sent a description to the Agricultural Society.

Cotton is also extensively grown in two ways, either as a rain crop, as in the before mentioned tracts, or is sown in April and receives moderate irrigation during the hot weather; under this treatment it grows to a much larger size than is common under the former method.

The irrigated wheat and barley are particularly luxuriant, and in good seasons the grain particularly fine; it is frequently sown as early as August or September so as to be in flower by December, but the fruit then formed is generally destroyed by the hard frosts, and in seasons of drought the white ants commit great devastation, laying waste whole fields by devouring the roots of the plants; rats also do great injury to this crop, burrowing in the sandy hillocks so plentifully interspersed among them and denuding the margin of the fields.

Mustard is also cultivated a good deal, and poppy sparingly and only for its oil not for opium. *Masur* I have never seen in this tract.

Rice is only grown in that part of this tract bordering on the *bábúl* region, and if ripe sufficiently early, is succeeded by a crop of gram in the same ground.

The usual kharif crops are *bajra* and *joar* and maize, all of which grow most luxuriantly and to an immense height.

The southern portion of this division which I have designated the *Jhand* tract, is termed by the natives *Malwa*, whence that appellation to the Sikh chiefs of families from the south of the *Sutlej* in contra-distinction to the *Mánjha* and *Doab Sikhs* or invaders from the other side. It is also named *Chowhára* as distinguished from the *Tihára*, or lower part of the upper division just described, in consequence of only $\frac{1}{4}$ of the gross produce being demandable as the government share, while $\frac{1}{3}$ is claimable in the former and $\frac{2}{3}$ in the remaining portion of this and the two preceding tracts, therefore termed *Pachdie*.

What I have just remarked regarding the luxuriance of the gram and kharif crops holds good also with regard to this division when the rains are tolerably plentiful. But the wheat is generally poor, owing to the very sandy nature of the soil. Here irrigation is impracticable owing to the very great distance of the water from the surface, varying from 100 to 300 feet. In many villages there is only one, in some not even a single well, therefore not only the cattle but even the inhabitants very much depend on ponds (*tobas*) for their support. In

dry seasons villages are often temporarily abandoned in consequence of the failure of water. Therefore it is a custom that those who take water out of a pond pay for it by digging and carrying out a basket full of earth for every pot they fill with water, so that the cavity is gradually enlarged and deepened.

The appearance of this part of the country is very peculiar. The fields are as it were basins surrounded by long low rolling hillocks of dry sand, either quite bare or clothed with a peculiar vegetation, and are almost universally surrounded by high thick hedges to protect them from the deer; these fences are made of dry thorns heaped loosely together, generally running along the summits of the sandhills, and between them lie the narrow roads barely wide enough for a hackery to pass.

The vegetation on these sandhills consists principally of a species of *Artemisia* of a most delicious fragrance, and an aromatic species of *Andropogon* resembling *A. twarancusa*. (Is either of these, or which of them is the *Nardus* of ARRIAN?)

This *Andropogon* is much liked by cattle and is said to communicate its peculiar flavor to the milk. Besides it are species of *Cenchrus* and *Pennisetum*, one of which is a most disagreeable torment to walkers, the sharp recurved hooks of its involucre fastening to one's clothes and even to one's skin; its seed however sometimes is used as food in times of great scarcity. The leaves both of this species and of two or three others which are indifferently termed *dhamun* are excellent fodder and are the principal grass for horses instead of the *dhub* which is very rare*. The *madar*, *Calotropis Hamiltonii*, with *Cucumis pseudo-cocynthis* and a species of *Momordica* also luxuriant on those barren heaps, with a species of *Clerodendrum* the wood of which is used for obtaining fire by friction, and two species of *Zizyphus*, *Z. jujuba*, and another, peculiar I believe to this tract of country, with smooth glossy leaves and globular purple fruit.

The most abundant thorn however is the *Jhand*, *Prosopis spiciger*†, which covers barren spots as the *Zizyphus* does in other parts of India

* This is remarkable for bearing on its roots a curious parasitical species of *Orobanche*, with very thick stalks from one to four inches in diameter, full of almost pure water, which it must have elaborated from the milky juice of the *madar*, and derived from sandhills so dry that it is difficult to believe that so much liquid could have been procured from them; and what is more remarkable is, that this parasite is only produced where the *madar* grows in the very driest sandhills and only in this portion of the country.

† When I first met this as a shrub I was unwilling to consider it as the *Prosopis* on account of its large *ovate stipules*, that tree being described as exsti-

as a low shrub, but it is also met with as a small tree mixed with the *phalahi* and *rerul* (I believe *Acacia leucophlæa*), which last as well as the *Jhand* are utterly useless except as fuel.

The *dhak* (*Butea frondosa*) and the *hins* (*Capparis sepiaria*) are almost unknown, while *Capp.* and *aphylla* grows to the size of a small tree, and in the month of April its scarlet flowers have a showy appearance mixed with the white blossoms of the *phalahi*. The *rahere* (*Bignonia undulata*) is found not uncommonly and is very brilliant when in flower; this with a small liliacious plant is a curious instance of plants from the Sewalik hills reappearing in so very dissimilar an habitat.

Of large trees the peepul is the only one of usual occurrence: sometimes the *Tamarix Fras* or *Pharmi*, as it is named in this part of the country, is found of a considerable size. The *sisso* extends even to the borders of the desert. *Sirris* is seldom to be seen; *mangoe*, or *jamun* never. The *Nim* is very rarely to be met with only near some Musalmán saint's tomb.

In the most south-westerly part of this tract bordering the desert, a considerable quantity of alkali is manufactured from a species of *salsola** and forms a considerable article of commerce under the name of *sajji*.

The population of the third tract differs very much from that of the former ones. In the more northern parts the zemindars are mostly Musalmán Rajpúts, with few Jats among them; but as we come southward the proportion gradually changes till in the *Tihara* a Musalmán is scarcely to be found and the zemindars are almost universally Jats and of the Sikh persuasion; in that part of the country also the Kahar or bearer caste disappears, and among the lower people the sweepers, assuming the title of Rangrethas, are the most numerous.

Lastly, a few words on the two strips of land bordering the *Jumna* and the *Sutlej*.

The *Khadir* of the former may be considered as upper and lower, the upper contained within the branches of the *Jumna* meeting near *Rajghat*, is almost entirely populated by Goojurs. The soil is cold,

pulate, but I have subsequently found stipules on the young branches of the full-sized tree, though they are smaller in proportion to the leaf than in the shrub; besides the prickles are much more numerous on the shrub than on the tree.

* It is a curious circumstance that I found a species of *salsola* near *Ambala* growing in a single salt-pan, and not another to be found, anywhere in the neighbourhood for miles, though I searched every salt-pan for it.

moist and sandy, as may easily be imagined, possession is most precarious as these upper branches of the river are constantly changing their course. An old tree is therefore seldom to be seen, or a pukka house, generally grass sheds form the only habitations, because the sandy soil will not bind to form mud walls but is washed to pieces by the first rain, therefore fires are very frequent in the hot weather.

The crops are the same as in my first division, exclusive of those which I mentioned as peculiar to the higher grounds, and they only succeed in years when elsewhere there is a failure; with moderate rain the whole country reticulated as it is with channels of the *Jumna* is overflowed, and it is only in very dry seasons that the crops succeed as in 1837 when they were most luxuriant.

The lower part of the *Khadir* is only intersected by a few channels of old streams now used as escapes from the *Delhi* canal, this portion is less liable to flooding and consequently in general bears middling crops. Gram is seldom or never sown in it, and masur replaces it.

The 'Bhet' of the *Sutlej* differs from the *Khadir* of the *Jumna* by, being yet more barren. (The upper part of this Bhet I have not seen, and the lower part is nearly entirely covered with thick grass jangal the haunt of wild beasts, similar to that in the *Gangetic Khadir*).

The sand of the *Sutlej* is much darker in color and with much larger flakes of mica than that brought down by the *Jumna*, and these larger micaceous particles are observable throughout the whole of the *phalahi* tract as well, while the *bábúl* and *dhák* regions partake of the Jummatic character.

Throughout the whole of this territory I have never seen the *matar* of Bengal (*Lathyrus sativus*) cultivated, but it is constantly to be found as a weed mixed with pulse or corn.

The *arhar* (*Cajanus flavus*) is never cultivated by itself, but the variety *C. bicolor* or *tíar* is sown round sugar-cane fields as before mentioned, and is cultivated in the hills under the name of *kúí* which leads me to favor the considering them as two distinct species and not merely varieties.

I had hoped to have been able to give a more complete account, but being removed rather suddenly I have been unable to complete some inquiries I was previously making and therefore send this imperfect as it is.

Appendix I.

Abstract of Thermometer kept at Ambala.

	Means.					Of diurnal variation.				
	1835	1836	1837	1838	Means.	1835	1836	1837	1838	Means.
January, ..	52.15	51.4	53.5	55.07	53.03	22.3	19.6	22.4	27.5	24.29
February, ..	59.82	57.7	56.3	62.3	59.03	23.	18.5	18.4	22.5	20.6
March,	64.	69.77	68.19	71.06	68.25	21.2	20.7	20.84	19.5	20.56
April,	77.07	76.43	79.85	79.17	78.38	20.7	19.8	23.5	20.85	21.21
May,	87.9	88.41	84.55	86.	86.66	20.	21.92	23.9	19.76	21.34
June,	90.	88.07	90.04.		89.37	15.	17.10	21.48		17.89
July,	83.1	83.31	86.92		84.41	8.2	13.	13.53		11.59
August,	84.73	83.9	86.38		85.	9.8	10.6	12.97		11.12
September, .	81.	79.47	82.68		81.11	12.	14.4	15.46		14.92
October, ...	73.36	71.1	75.43		73.31	21.82	24.	19.48		21.76
November, .	62.2	63.7	64.37		63.42	22.87	24.8	23.3		23.65
December, .	55.91	54.	56.1		55.33	19.53	22.	22.6		21.37
Mean,	72.57	72.27	73.7		72.85	18.6	18.45	20.6		19.19

	Of Minimum.				Of Maximum.				Of diurnal variation.				
	1835	1836	1837	1838	1835	1836	1837	1838	1835	1836	1837	1838	
Jan. {	Highest,	53.	54.	50.	47.	70.	67.5	70.	74.	29.5	27.5	28.	35.
{	Lowest,	34.	31.5	37.	33.	55.	54.	63.	65.	12.	7.	10.	23.
Feb. {	Highest,	60.	54.5	61.	59.	75.	76.5	72.	81.	28.	24.	32.	30.
{	Lowest,	40.	42.	40.	43.	65.	53.	56.	61.	13.	1.	5.	2.
Mar. {	Highest,	68.	67.	68.	67.	82.	85.	92.	87.	30.	26.	30.	27.
{	Lowest,	48.	50.	48.	52.	68.	76.	68.	70.	8.	10.	12.	3.
April, {	Highest,	74.	76.	75.	77.	95.	95.	102.	99.	28.	27.	34.	30.5
{	Lowest,	59.	60.	60.	59.	79.	76.	75.	73.	14.	4.	9.	.0
May, {	Highest,	86.	87.	85.	87.	105.	106.	109.	107.	28.	28.	34.	27.5
{	Lowest,	68.	66.	59.	65.	85.	90.	80.	72.	14.	14.5	7.	.6
June, {	Highest,	92.5	85.	87.	94.	109.	107.	105.5	112.	28.5	29.	29.5	
{	Lowest,	74.	69.5	63.		81.	79.	95.		3.	1.	12.	
July, {	Highest,	83.5	83.	89.5		93.	93.	105.5		17.	15.	25.5	
{	Lowest,	72.	75.	75.5		78.	81.	85.		2.	4.	5.	
Aug. {	Highest,	85.	81.	87.		95.	93.	99.5		15.	15.	19.	
{	Lowest,	74.	73.	72.		78.	75.	81.		4.	2.	8.	
Sept. {	Highest,	81.	81.	78.		91.5	93.	93.		22.	23.	20.	
{	Lowest,	66.	59.	71.		81.	73.	86.		5.	5.	10.	
Oct. {	Highest,	70.	70.	72.		87.	88.	90.		27.	31.	23.	
{	Lowest,	57.	53.	58.		82.	78.	79.		15.	19.	14.	
Nov. {	Highest,	57.	56.	60.		85.	82.	82.		32.	27.	28.	
{	Lowest,	45.	42.	44.		66.	68.	69.		13.	21.	13.	
Dcc. {	Highest,	58.5	52.	51.		75.	69.	72.		28.	21.	26.	
{	Lowest,	39.	37.	40.		58.	60.	62.		7.	9.	19.	
Whole year, {	Highest,	92.5	87.	89.5	94.	109.	107.	109.	112.	32.	31.	32.	35.
{	Lowest,	34.	31.5	37.	33.	55.	53.	56.	61.	2.	1.	5.	0.

Appendix II.

Abstract of Herbarium collected in the Sikh States, exclusive of plants found only in the immediate neighbourhood of or on the Sewalik range.

	Total Cult.	Loranthaceæ,	1	0
<i>Polypetalæ.</i>		Cucurbitaceæ,	17	9
Ranunculaceæ,	3	Ficoidaceæ,	1	0
Papaveraceæ,	3	Cruciaceæ,	11	6
Nymphæaceæ,	2	Capparidaceæ,	6	1
Nelumbonacæ,	1	Resedacæ,	1	0
Apiaciæ (Umbelliferæ,)	9	Violacæ,	1	0
Vitacæ,	3	Samydacæ,	2	0
Onagrariaceæ,	5	Moringaceæ,	1	1
Combretaceæ,	1	Flacourtiaceæ,	1	0
Myrtaceæ,	2	Sapindaceæ,	1	0

valvularum intus reflexis; seminibus numerosis reniformibus placentis 4 parietalibus suturas subtendentibus affixis.

Bergia odorata, (mih.)

Ramis decumbentibus ramosis teretibus pubescentibus. Foliis oppositis bistipulatis oblongo-ellipticis sessilibus serratis pubescentibus, stipulis subulatis, ramulis axillaribus; floribus axillaribus 1-3 utraque axilla, pedunculatis pedunculis 1-floris, calyce 5 sepalo, sepalis ovatis pubescentibus, petalis 5 obovatis integris; staminibus alternis brevioribus, stylis 5-ovario 5-loculo.

Odor aromaticus Antbemidis.

Habitat in inundatis proper Báláwali.

Malva Malvensis, (mih.)

Prostrata hirsutissima, ramis teretibus foliis petiolatis quinquefidis, segmentis 2-lobis obtusiusculis; floribus axillaribus subsolitariis in apice ramorum subracemosis foliis floralibus minimis sub-nullis petiolatis. Bracteolis 6 subulatis; Calyce ventricoso hirsutissimo. Corolla pallida calyce vix longiore. Carpella 7, 8 plerumque 9, lateribus planis rugosis dorso costato. Odor aromaticus Pelargonii, Crescit cum præcedente.

Astragalus sesameus, D. C. II. p. 288.

Ramis decumbentibus humi adpressis longis simplicibus teretibus hirsutiusculis foliis alternis 5-7-foliolatis foliolis ovalibus hirsutiuseculis, stipulis liberis cuneatis; racemis axillaribus, pedunculis in anthesi folio brevioribus in fructu elongatis, floribus sub-capitulatis brevissime pedicellatis, bracteis subulatis ciliatis; calyce hirsuto 5 dentato, dentibus acutis supra fisso, vexillo obovato, emarginato recto, alis oblique ovatis unguiculatis carina obtusa, stam. 1-9-filamentis brevibus antheris hirsutis, stylo brevi curvato stigmate capitato glabro legumine ovato, dorso sulcato cum stylo persistente apiculato villosa seminibus oblique reniformibus.

Flores minuti pallide purpureis. Lodihana.

Astragalus incurvus, D. C. II. p. 304.

Perennis hirsutus, caulibus radiatim prostratis, foliis alternis petiolatis alternatim pinnatis foliolis oblique ovatis apice acutis hirsutis, stipulis subulatis petiolo adnatis, floribus capitulatis pedunculis axillaribus brevibus 4-5-floris bracteis subulatis hirsutis; calycibus 5 partitis segmentis subulatis, corolla purpurascens, vexillo longo obliquo valde emarginato carina duplo longiore, alis vexillo brevioribus 1-dentatis leguminibus stellatim dispositis margine inferiore introflexo falcatis gibbis hirsutis, utroque loculo 4-spermo seminibus rhomboideis.

Malva et Pentepotamia. These two species are remarkable as being identical with or very strongly resembling the two African species to which I have referred them.

Heliotropium.

Perenne ramosissimum omnino pilis sub-spinosis asperrimum, foliis sessilibus lanceolatis valde rugosis asperrimisque, corymbis subterminalibus dichotomis floribus sessilibus, calycis segmentis obtusis marginatis pilosis corollæ tubo ventricoso viridi calyce dimidio longiore inferius piloso, margine brevi undulato albo 5-fido segmentis rotundis capsula lævi rugosiuscula vix 4-partibili. In Arenosis Malwæ et Lodihanæ abundantissimum.

Boraginearum species—

Annua erecta ramosa hirsutissima pilis mollibus spinulosisque mixtis, foliis lanceolatis distanter crenatis, ad crenas costasque spinulosis aliter villosis;

floribus racemosis pedicellatis, racemis foliolosis; calycibus ventricosis, 10-costatis, 5-partitis, corolla tubulosa limbo 5-partito segmentis rotundis, fauce breviter 5-fornicata intus pilosâ at non clausa, staminum filamentis brevibus antheris ovatis cærulescentibus, pistillo recto libero stigmatе clavato, nucibus basi affixis oblique ovatis subrugosis apice acutiusculis, basi perforatis fauce perforationis plicata.

Herba habitu Hyoscyami, calyce Physalin vel Lychnidem vespertinam æmulans, Corolla alba.—Malwa, Pentepotamia.

Orobanche Calatropidis.

Spica confertiflora, caule (vel rachî) glabra spongiosa succi (aquæ similis) plenâ bracteis ternis 1-floris, unâ inferiore majore ovata apice acuminata demum marcescente calycem superante carnosâ, purpurascente supra fulvâ, duabus lateralibus ellipticis cuniculatis lateribus versus basin pilis carnosis ciliatis, aliter glabris, calyce brevioribus; calyce 5-fido segmentis obtusis glabris corolla ringente tubo calyce subduplo longiore curvato, limbo bilabiato labio superiore 2-fido minore subrecto segmentis rotundis emarginatis purpureis, inferiore patulo 3-fido segmentis rotundis emarginatis ad marginem purpurascente, intus flavo, fauce valleculis-2 luteis instructa, staminibus 4 didynamis inferioribus longioribus, glaberrimis, junioribus in antherium lineare antheram superans productis quod postea marcescens ad antheram affingitur, antheris 2-lobis cordatis pilis albis presertim ad basin marginesque saccarum hirtis, junioribus hisee pilis arcte coalitis post impregnatione discedentibus, polline ovali. Pistillo glaberrimo ad basin ovarii disco luteo circumdato ovario conico 1-loculari placentis 4. Stylo staminibus longiore medio angustato, curvato, stigmatе in apice clavato styli glanduloso.

Crescit in rædicibus Calatropidis Hamiltonii in arenosissimis Malvæ Scapo 1-3 pedali crassissimo, bracteis inferioribus sæpius efloratis.

Plantago bauphûla, (mihi.)—indice — ?

Caulibus decumbentibus ramosis subhirsutis foliis alternis ample canibus, lineari-lanceolatis distanter denticulatis, sub-carinatis, pilis raris apice articulatis hirsutiusculis pedunculis axillaribus foliis longioribus minute hirsutis vel subglabris viridibus vel purpurascentibus, spicis confertifloris ovatis, bracteis unifloris costis viridibus marginibus latis scariosis inferioribus carinatis apiculatis majoribus (at non foliaceis) sepalis 4. rotundato-ovatis, 2 exterioribus inferioribusque bracteiformibus costa viridi, 2, interioribus omnino membranaceis.

Corollæ limbo 4-fido, segmentis ovatis acuminatis scariosis, staminibus in fauce insertis, filamentis filiformibus purpureis segmentis corollæ æqualibus, antheris ovatis versatilibus luteis, stylo exserto apice hirsutiusculo; capsula membranacea ovata versus fundum circumscissa, rosea, seminibus 2 naviculi-formibus, albumine concavo ovato embryone centrali immerso radiculâ inferiore, cotyledonibus linearibus placentâ centrali ovatâ crassiusculâ in medio laterum in valle lineari excavata propter receptionem embryonis, posterioribus in fructu membranaceâ. Malwâ et Pentepotamiâ.

Salsola lânâ, (mihi,) nomine Indorum — ?

Frutescens ramosissima, foliis breviter petiolatis cylindraceis vel ovatis, rectis vel falcatis, acutiusculis vel obtusis, floribus 3-4 glomerulatis axillaribus sessilibus, sepalis 5 concavis rubris, stamina iis opposita tegentibus filam 5: brevibus antheris viridibus stylis 2-3-4. brevibus rectis exsertis ovario unico.

Fructum maturam non vidi.—Malwâ et Pentepotamia.

II.—*Extracts from the MOHIT (the Ocean), a Turkish work on Navigation in the Indian Seas. Translated and Communicated by JOSEPH VON HAMMER, Baron PURGSTALL, Aulic Counsellor, and Prof. Orient. Lang. at Vienna, Hon. Memb. As. Soc. &c. &c.*

FIRST CHAPTER.

OF THE NAMES OF THE SKIES, AND THE STARS ; OF THE ELEMENTS, AND WHAT BELONGS TO THEM.

FIRST SECTION. *Of the skies, stars, and elements.*

Be it known that all the skies are perfectly round in convexity and concavity each between two parallel surfaces ; their centre is that of the world ; they are nine in number, are called the ‘ universal skies,’ and are comprehended one within the other. The four elements are within the concavity of the lunar sky, and have fixed themselves in the middle of the terrestrial globe because gravitating like all bodies towards the centre of the world, they found their repose there. According to the expression of philosophers the earth is surrounded by the water, but the surrounding is an imperfect one, because, according to the opinion of old sages, the fourth part of the northern side of the earth is shining forth ; the modern philosophers say more, and in fact, the Portuguese have found on the west of the Canarian islands a new continent which they call the New World, and which is drawn up in the maps of our time ; we will mention it, please God, with more detail, in the chapter of the Indian islands.

The water and the earth form together one globe ; the cause that the earth came forth of the water, is only God’s grace, who raised towering mountains, and sunk flat valleys to make them the abode of animals and plants. The earth shone forth by the natural inclination of the water to descend to the deeper grounds, the effect of which was, that the higher places remained uncovered with water. Some say that there are six hundred species of animals on the continent, and eight hundred in the sea. The Sheikh, author of the *Shefa* has said of the animals : that all those who have ears propagate by birth ; and those which have only auricular holes, by eggs. The eggs are of two species—those the shell of which is hard, have two colors ; one, that of the interior part and the other of the exterior covering ; but those, the shell of which is tender, are but of one color and have no exterior hide ; as the eggs of the fishes. After the terrestrial globe comes the aerial, after it that of fire ; then the skies of the moon, mercury, venus, sun, mars, jupiter, saturnus, that of the fixed stars, and the greatest sky which is called *Attas*. The reason that the universal skies are in the

number of seven, lies in their different motions. The proof of it is that the before-said planets cover one the other. The covering sky is the inferior and the covered one the superior.

The stars are divided in three classes. The first: the seven planets every one of which is moving in its proper sky. The second class are the fixed stars, which are real stars like the planets, and which are all fixed in the eighth sky. The third class are only imaginary and not real ones; these are the two points which are called the poles. The two poles of the greatest sky, make the difference between east and west. In the same manner there are in the ninth sky two insensible points; all the stars are fastened in the globe of the skies like the stone in a ring. Their rising and going down is fixed by returning cycles. The line which passes through the two poles is called the axis محور. In order to go on in the operations of this science it is necessary to name the four great circles which are the *meridian*, the *equator*, the *horizon* and the circle of *height**.

SECOND SECTION. *Of the divisions of the circle of the sky.*

The learned in nautical science agree that the circle of the sky, that is to say, the horizon, is divided into thirty-two parts, called *khan*†; because the ship can go in thirty-two directions, which applied to the horizon make these thirty-two divisions, every one of which is named after a particular constellation to which seafaring men have given a particular name. So they call in Turkey the north, *Yildiz*, which the masters of the Indian seas call *Kutb Jáh* قطب جاه. So the *two calves* (β . and γ . in *ursa minor*) are true north, the rising point of them is N. by E., the setting point of them N. by W. The rising point of the bier (the square of *ursa major*) N. N. E.; the setting point of the bier N. N. W. The rising point of the camel (β . in Cassiopeia;) N. E. by N. The setting point of the camel, N. W. by N.; the rising point of Capella N. E.; the setting point of it N. W.—The rising point of the falling eagle (α in the *lyra*;) N. E. by E., the setting point of it N. W. by W.—The rising point of Spica E. N. E.; the setting point W. N. W. The rising point of the *Pleias* E. by N.; their setting point W. by N. The rising point of the eagle *true east*, the setting point of it, *true*

* دایره ارتفاع This we presume is any circle passing through the *Zenith* of a place, on which altitudes above the horizon are measured.—ED.

† خن Perhaps the Persian word *kháneh*, place, house, division, or *khand* from the Sanskrit खण्ड part, division.—ED.

west. The south is in *Asia* minor and *Roomeli* generally called the *Kibla*. The master of the Indian seas calls it *Kutb-i-Soheil*, that is to say, *the pole of Canopus*. The rising of *Solbar* or *Solibár** (which seems to be *al-Phard*) S. by E.; the setting point of it S. by W. The rising point of the two asses (γ and δ in Cancer :) S. E. by S., the setting point of it S. W. by S. The rising point of the scorpion S. E.; the setting point of it S. W. The rising point of the crown S. E. by E.; the setting point S. W. by W. The rising of Arcitenens E. S. E.; the setting point of it W. S. W. The rising point of the twins E. by S.; the setting point of it W. by S. These are the names of the thirty-two *khans* (points of the compass). The middle point of two khans is called the half of a khan, and the middle point of this is called the quarter of a khan. The word *karta* كرتة is but a corruption of the word *قارطة* *quarto* which in the language of the Francs signifies the fourth part. The denominations of the khans after the rising and setting of the above named stars, belongs to the Indian seas and the denomination is only approximative and metaphorical, and not real. The division is taken from the compass, which in *Turkey* is known by the name of *Pussola*†. The above mentioned names are not used in the white and black sea, where *Ursa major* and *minor* are continually in sight, but where *Canopus*, *Salibár* and the *Aselli* are not seen rising and setting; the names used in the Turkish seas agree with the points of the horizon, independent of the rising and setting of stars; this way is by far the more easy, because there are only eight names of winds, the middle and quarters of them, which makes ten words fifteen rising points (the setting points not counted :) the northern pole and the south pole, altogether seventeen names which it is easy to retain. It is by far more easy to say *east by north* or *west by north*, than to retain in memory the rising and setting points of the pleiades.

The THIRD SECTION explains the *Isbá*, اسبع; and the middle of the *Khans*.

The circumference of the circle (globe) is of 360 degrees, each degree $66\frac{2}{3}$ miles, the whole circumference 24,000 miles; each degree has $22\frac{2}{3}$

* *Solbar* not *Salibár* is the true vocalisation. [The navigators call it *Salibár*.—ED.]

† From the Italian or Portuguese *Bussola*, which the late M. KLAPROTH does not allow to be derived either from *Bossola*, a box, or the old English *Boxel*, but rather from the Arabic *موسلة* pronounced *Moússala*, the point, or pointer. The present example however in which the word is written with a *p* rather proves that both the Arabic terms *Pussola* and *Moússala* are corruptions of *Bussola*.—ED.

farsangs; the whole 8000 *farsangs*. An *اسبع* is formed by $1\frac{2}{3}$ degrees*. Eight *ذام* *zám*s make one *isbá*, and again $4\frac{2}{3}$ *zám*s one degree; $114\frac{2}{3}$ miles are one *isbá*, $14\frac{2}{3}$ miles are one *zám*; one degree contains seven parts of the twelfth of the *isbá*; so the whole circumference contains 210 *isbá* or 1680 *zám*s, the middle of two *khans* is $6\frac{2}{3}$ *isbá*; counting by degrees, $11\frac{1}{4}$ degrees; the whole circle 210 *isbá* at our time, but in ancient times the middle measure of each *khan* was 7 *isbá*, therefore the circle contained 224 *isbá*; the first is the better computation which is proved by the difference of the greatest and lowest height of *بدرماري* which is but of four *isbá*s. Astronomers know that from the rising of *Judda*, that is the polar star, to its setting, 6 degrees and 6 *isbá*s are counted, each *isbá* being $1\frac{2}{3}$ degrees; but the rising and setting of *Judda* is not always the same because its motion follows that of the sky of the fixed stars, by which, in the course of time, the distance of it from the meridian becomes greater and sometimes smaller, according to the pole of the world; in our time it is so trifling that it makes no difference.

Be it also known that the *isbá* is of two species; the one, that used by the masters of the seas; this is the fourth part of the distance between *Capella* and *دبان* (the two *Ursæ*); the masters measuring with their instruments reckon this distance to be four *isbá*. If the measurement is taken in *ج ٤٧* (*٥٧٧ Leo*) and that the measure is neither too large nor too narrow. The distance between *Capella* and the two *Ursæ* is four *isbá*. The second species of *isbá* is not the nautical but geometrical one, which is the breadth of six moderate grains of barley; according to the systems of the moderns, 24 *isbá* or inches make one yard (*ذراع*) and 4000 yards one mile, and three miles one *farsang*.

The FOURTH SECTION, explains the distance of the stars, which are used to measure the khan from the meridians and from the pole.

The distance of the polar-star is $86\frac{1}{2}$ degrees; the distance of the two calves (*β γ*) 77 degrees, the distance of the first star of the square of *Ursa minor* *مقدم تئين* 66 degrees; the distance of *منير ناقة* 52 degrees; of *Capella* 45 degrees; of *Lyra* $38\frac{1}{2}$ degrees; of *Arcturus* $23\frac{1}{2}$ degrees; of the *Pleias* $11\frac{1}{4}$ degrees; of *Aquila* 7 degrees. All these distances are northern. The southern ones are the following: *Solbar* called also *Mohannis*, that is to say, the perjurer 61 degrees. The reason of this denomination is because an Arabic tribe, having taken its rising for that of *Canopus*, swore that it was *Canopus*; which

* Should be $1^{\circ} 36' 25''$ since 224 *assaba* = 360 degrees.

was a perjury. The distance of *Canopus* is 52 degrees. Ast his is a most renowned star, the southern pole has taken its name from it; the distance of *ظالم* which is the first of the two *Aselli*, 49 degrees; the heart of the *Scorpion*, (*Antares*) $24\frac{1}{2}$ degrees; the *Crown* 17 degrees; the *Arrow*, else called *Shaurani Yamani*, that is to say, *Sirius*, 16 degrees; *Djoza*, (the girdle of *Orion*,) 1 degree. This last one though a northern one has been mentioned with the southern ones.

The distance between the north-pole and the polar-star (*Djâh*) is two *isbâ*, some say that the difference is less. The distance between the pole and the star of the nail *كوكب مدينه** is $8\frac{1}{4}$ *isbâ*, the distance between the polar-star and the star of the nail $6\frac{1}{4}$ *isbâ*; that between the polar-star and the greater of the two calves $7\frac{1}{4}$ *isbâ*. Those distances were taken by the former masters, with the instruments made by themselves by which the elevation of the stars was at variance, which is not the case with the present instruments. The distance from the stars to the meridian and the pole of the world is not always the same, because the stars move with the eighth sky, so that by its motion some northern stars become southern ones and vice versâ, so that the stars which in the zodiac are now seen in the beginning of *Capricornus*, may fall into the beginning of *Cancer*, the distance of which is nearly 48 degrees. The rest may be guessed by this, but in our times the operations are sure.

The FIFTH SECTION explains the instruments of measurement.

The first instrument which the ancients used, consists of nine tablets, or boards, لوح, the first of which, of the size of man's little finger is divided in four folds† (*مشكك*), each of which is called one *isbâ*, that is to say, that the first tablet is reckoned to be four *isbâ*. Be it known that each pilot takes the tablet according to his hand, so that if he is a tall man the divisions happen to be great, and if he be a short man they are small; therefore a difference must necessarily occur and the operation is not sure‡. The distance between *Capella* and *Dobban* (*دبان*) which in the lunar stations fall in *♌* (♌ of leo) is just four *isbâ*§; which agrees with the above measurement taken by the hand.

* This may be γ cephei of our globes by its relative distance from polaris and the pole.—ED.

† Shikan may here be translated rather a groove or furrow.—ED.

‡ i. e. If the instrument of one man be used by another.—ED.

§ The star here called *Dobban* must be understood, not as *Dabbe*, β aurigæ which is $7^{\circ} 45'$ distant from *Capella*, making the *isbâ* = $1^{\circ} 55'$,

The second tablet or plate is one *isbá* more than the first and so on, until the ninth. Through the middle of this tablet passes a thread so that it increases from the first to the second table half an *isbá*, and so on to the ninth; by this the elevation of the stars is taken*. Be it known that the measurement of the ninth table is according with the first plan. *Capricornus* having the smallest elevation†, it will be found there to be 12 *isbá*. In the 8th table, 11 *isbá*, and so farther on till the first, where its elevation is four *isbá*. In the same way the *calves*, the four stars of the square of *Ursa minor* and the elevations of the other stars are calculated. The method of taking the measure is as follows:—You take the table with the left hand and the thread that passes through their middle in the right; you stretch your left hand firm and take the elevation which gives four *isbá* for that of *Juddí* (جدى).

The moderns use to the same purpose a bar لوح, three or four spans long, which they divide in five parts; one part forms a tablet لوح the breadth of which is the half of its length, that is to say, the fifth part of the half; a thread passes through the middle. The bar is divided in twelve parts and where it cuts off six parts a knot (or division) is made. The pilots begin their measurement from this knot, *Juddí* having the smallest elevation. The distance between the circle of the horizon is twelve *isbá* and at this time the stations *Isarfa*, (β in the lion,) *Awwa*, ($\beta\eta\gamma\delta\epsilon$ in the virgin,) and *Semak Spica*; are near, that is to say, in the zenith; at this time *Juddí* is two *isbás* below the pole of the world; the measure of an *isbá* is $1\frac{5}{7}$ degrees ($1^{\circ} 43'$); at that place the elevation of the pole of the world is 14 *isbá* or 24 degrees which is the greatest mile‡. The greatest elevation of *Juddí*, is that in the lunar stations *fēra el-mokaddam*, ($\alpha\beta$ in *Pegasus*,) and *moakhkhar*, (γ in *Pegasus* and α in *Andromeda*;) and *Resha*, (β in *Andromeda*;) there are according to this calculation six *isbá*: they call this measure, the original or fundamental measure; that is to say, two *isbá* above the pole of the world. You divide then this bar in eleven parts, throw five of them away and make a knot at the sixth, then remain 11 *isbá* for the elevation of *Juddí*. You divide again the bar in ten parts, throw away four and make a knot at the sixth which gives the elevation of ten *isbá*. Then you divide it in nine parts, throw away three and make a knot at the sixth so that nine *isbá* remain for the elevation. Again you divide it in eight parts, throw away two, make a knot at the

* See the subjoined note.—ED.

† For 'smallest' I should here desire to read 'greatest'—the meaning being, that according to the estimated elevation is the *loh* to be selected.—ED.

‡ Perhaps the extremity of the scale should be understood by this expression.

sixth, so that eight *isbá* remain for the elevation. You divide it then in seven parts, throw away one making a knot at the sixth, in which case the elevation of *Juddí* remains seven *isbá*. You divide it again in seven (six?) parts, but you throw none away and make the knot at the end of the yard, in which case there remain six *isbá* for the elevation. Here the operation ceases; but all this is calculated on the lowest elevation of *Juddí* which is the original measure. The way of measuring with the above said thread and table لوح , is the following: first you take the tablet in your left hand, take hold of the first knot with your teeth, stretch forth your hand, don't twinkle with the left eye, and take the elevation so that *Juddí* is above and the horizon below, no more and no less. At this time the arc of elevation between the horizon and *Juddí* is 12 *isbá*; each time that a knot is added an *isbá* is lessened till at last there remain six *isbá*, and here ends the operation with the length of the table or bar. If you wish to operate with its breadth it is as follows: at the knot made for the elevation of twelve *isbá*, that is to say, at the half of the yard the elevation of *Juddí* according to the measure of the breadth of the table, is again six *isbá*. Be it known that if you are operating with the breadth and a knot is added, the elevation loses half an *isbá*, so that it comes at last to three *isbá*, in which place the northern pole is five *isbá*. From this place the equator is distant 40 *zám*, which makes nearly 570 miles and the original measure (قياس اصلی) is here at an end, because *Juddí* being in the original measure near the horizon its measurement is not just. They call this the original or fundamental measure because *Juddí* is beneath the pole of the world in the lowest elevation opposite to the pole. Besides this they take the measure by the *Farkadain*, the *Naash*, and other stars.

The SIXTH SECTION explains the calculation of the greatest elevation of the stars.

The way is this: you add the distance of the star in the northern quarter to the latitude if it has a northern distance, and you subtract it if it has a southern distance, and the result of the addition or subtraction is the elevation of the star; if it exceeds 90 degrees you throw it away from the half circle and what remains is the greatest elevation; in the southern quarter the operation is quite the reverse. If you wish to change the degrees into *isbá*, you know by what has been said that one *isbá* is $1\frac{2}{7}$ degree, so that it is easy to make out the *isbá*; but in order to calculate just the elevation of the stars it is necessary to know to a certainty the distances. Be it known that as the stars move

with their skies their distances are sometimes different which must be known for the purpose of operating.

Note on the above chapter. By JAMES PRINSEP, Sec., As. Soc. &c.

The first chapter of the Mohit, as I anticipated, explains all the allusions to the stars, the points of the compass, and the methods of measuring the latitude, which were so difficult to understand in the chapters of voyages first translated; while the examination of the *Arab* and *Maldivé quadrants* (if they may be so called) to which I was led in order to understand the nature of the 'celestial inch' or *isbd*, &c. has prepared me to comprehend at once the descriptions in the present chapter which, as the Baron states, "are quite incomprehensible without the knowledge or sight of the instrument itself, which no doubt must be actually known by Indian or Arabic masters*."

The first question to be solved is what are the actual stars corresponding with the designations adopted in SIDI'S work, as well as on the Arabic compass? The fourth section furnishes the data for the solution of this point, for it contains, not the azimuthal positions of their rising and setting, but their absolute declination north or south of the equator. But to compare these declinations with our present tables allowance must be made for the *annual variation* in declination for the time elapsed since SIDI'S tables were framed. To find this epoch we may take the declination of Polaris, طوبج , which is given in the text as N. $86^{\circ} 30'$, whereas on the 1st January 1839† it is by the nautical almanac, N. $88^{\circ} 27'$. The difference, $1^{\circ} 53' = 6780$ seconds, divided by $+19''.3$ the annual variation of this star, gives 353 years prior to 1839 as the epoch, or A. D. 1486. SIDI'S book was written in 1554, but it was compiled from ten works of preceding authors, five of them ancient, and five modern. The tables he consulted were probably much anterior, perhaps those of ULUGH BEG (A. D. 1437), or of NASIR UDDIN TU'SI, astronomer to the Mongol Halagu Khan at *Tabriz* in A. D. 1264. It is impossible to expect much accuracy where the text does not pretend to come nearer than the half of a degree, but still as we have sixteen stars we may apply the BENTLEY method of minimum errors to find the date:

* On board the Futtle Barry, (*Fatih-ul bari*) I could find none of these instruments—nor were the points of the ancient compass known—all is now English in Arabic navigation.

† I make use of this epoch because I happen to have on my table a Greenwich Ephemeris for 1839, and none for the current year.

Arabic name of star.	Arabic declin.	Star supposed to be intended.	Declination 1st Jan. 1839.	Diff. of declination.	Annual variations.	Year of agreement with Arabic declin.
1. الجدى	N 86° 30"	Polaris,	N 88° 27'	+ 1° 57'	+ 19.°3	1486
2. الفرقد	N 77 0	β Ursæ minoris,	N 74 49	- 2 11	- 14.7	1305
3. مقدم تينين	N 66 0	α Draconis, or α Ursæ maj.	N 64 53	- 1 7	- 18.0	1606
4. مئذير الناقة	N 52 0	γ Ursæ maj.	N 62 37	- 3 23	- 19.2	1205
5. العيوق	N 45 0	Capella,	N 50 7	- 1 53	- 18.1	1465
6. الواقع	N 38 30	α Lyrae,	N 45 49	+ 0 49	+ 4.7	1235
7. السماء	N 23 30	Arcturus,	N 38 38	+ 0 8	+ 2.7	1660
8. الثريا	N 15 11?	Aldebaran,	N 20 1	- 3 29	- 18.9	1276
9. الطائر	N 7 0	α Aquilæ,	N 16 11	+ 1 9	+ 7.9	1384
10. اجوز	S 1 0	δ Orionis,	N 8 27	+ 1 27	+ 8.7	1239
11. السعري	S 16 0	Sirius,	S 0 25	- 0 35	- 3.1	1159
12. الاكليل	S 17 0	β Scorpionis,	S 16 30	+ 0 30	+ 4.4	1430
13. العقرب	S 24 30	Antares,	S 19 21	+ 1 21	+ 10.3	1018
14. الظليم	S 49 0	α Gruis,	S 26 4	+ 1 34	+ 8.3	1191
15. السهيل	S 52 0	Canopus,	S 47 44	- 1 16	- 17.3	1575
16. سلبار	S 61 0	Achernar?	S 52 36	+ 0 36	+ 1.8	639
			S 58 3	- 2 57	- 18.9	1282
			Average year of agreement.			1282

The average epoch of the Arabic tables is then A. D. 1282 or almost precisely that of NASIR UL DIN TU'SI' before mentioned. The greatest discrepancies are naturally found in the stars of least annual variation; because half a degree, the limit of accuracy in the Arabic column, is in such cases equal to several centuries:—thus for Rigel, with annual variation of three seconds we cannot expect to come nearer than $1800'' \div 3'' = 600$ years, nor in Canopus than $1800'' \div 2'' = 900$ years!

It will be remarked that I have in some instances been obliged to abandon the usually received equivalents of Arabic stars, and to select others that were more conformable to the conditions. Of the *farqa-*

dein, (β and γ Urs. Min.) only the former would answer. No. 3 is translated 'the firststar of the square of *Ursa minor*,' but no star of that constellation has the necessary declination; as the square of *Ursa major* has the same name in Arabic *الذعش*, I have inserted α Urs. Maj. the principal star of the square, to shew that it will answer perfectly, but if I have read the Arabic name right (for in the manuscript it has no points to the letters), it should be 'the leading star of *tinín*, the dragon, to which I have accordingly given the preference, though it does not furnish so good an epoch. *مذيرناقه*, 'the bright star' of the she-camel I can identify with no other than the extreme star of the tail of the great bear, the last of the *three* 'daughters of the bier,' and itself named *binát-násh* on our globe. I formerly thought it was *عناق* the second star, but this is 5 degrees too far north. The Arabic globes and tables write *القائد* 'the leader' in lieu of *الناقاة*. β Cassiopeizæ the star suggested by M. VON HAMMER is 8 degrees too far northward.

Of Capella, Vega, and Arcturus there can be no doubt: but the next of the series, translated *Pleias* by the Baron with a north declination $11^{\circ} 15'$ cannot certainly represent the *Pleiades* which are in 23° north. I have, as on the former occasion, preferred Aldebaran (the bright star of the *Hyades*) whose name, *الثور* the bull, does not much differ from *الثريا* the pleiades: but for this interpretation it is advisable (though not necessary) to read $15^{\circ} 11'$ instead of $11^{\circ} 15'$, for the declination.

To *Jozeh*, if it were to be taken in the usual acceptance of a contraction of *Rijal uljozeh* (our Rigel) we should be constrained to allow a correction, from 1° to 10° south declination which would bring it to the compass azimuth of E. by S.: but the text mentions its being out of position and rather a northern star or one close upon the equator, so that we may safely assume it to be δ Orionis as in the above table, without altering the text. The southern crown on our globes is far too south for the *الكليل* of SIDI, or of the compass, which is evidently *الكليل العقرب*, or β Scorpionis. Antares is not liable to mistake: but there is some misapprehension in regard to *Zalim* *ظلميم*. The Baron translates it 'the first of the two Aselli' (*حمامارين*): now the Aselli are two small stars in Cancer, in 19° and 22° north declination, whereas *Zalim* is in 49° south. Again Dr. DORN* states Fomalhaut of the *Piscis Australis* to be denominated *ظلميم* on the Arabic globe, but this again is still 18 degrees too northerly. My own opinion was before given in favor of α and β Gruis for the *Hamárein*, and the declination, now furnished by SIDI, corroborates my selection, which is further confirmed

* Transactions Royal Asiatic Society, vol. II. page 392.

by the Arabic appellation *zalim*, which signifies 'a male ostrich,' not much differing from *grus* 'a crane.'

Canopus is too notorious a star to admit of any doubt, except to the perjured Arab tribe! but its annual variation is too small to yield fair data for calculating the epoch of the tables.

For the last of the list, *Salibár*, I before wavered between α Eridani and η Argus, and I should be able to propound a plausible excuse for the Arab tribe's mistake, (were the latter to be found correct,) in the discovery lately made by Sir JOHN HERSCHELL at the Cape, of the variable brilliancy of this star 'which in a few months had come to surpass all the stars of the first magnitude except Sirius, Canopus, and α Centauri*:' but when tried by the test of the minimum errors it is found wanting. In 1839 it has S. Declin. $58^{\circ} 50'$, with annual *increase* of 18.8 seconds, so that in the 14th century it would be 5 degrees too far north, ; whereas *اخوالذهر* or Achernar precisely corresponded with the Arabic declination in 1288 A. D. The Baron's suggestion of *Alphard* (β Hydræ) is quite untenable, that star having only $7^{\circ} 57'$ south declination.

The present section in addition to the above valuable information, tells us why the south pole has been called *Soheil*†. It is a contraction of *qutb i soheil*, or pole of Canopus, to distinguish it from *kutb i jáh*, the north pole.

There is no latitude in which the several stars, as now determined can be made to rise and fall in their assigned positions on the horizon : the names were purely conventional, yet in the latitude of 15° north a good many of them find their proper places,—as if the system had been first framed at *Loheia* in the Red Sea, *Saibán* of the ancients, which is the starting point of all SIDI'S voyages to India, and we have seen many of the terms quoted as "used by the Indian masters."

I should here correct a serious mistake made in my former notice, in supposing that the ancient Arabs like the modern navigators, or the Hindus, considered the polar star to be immovable. The chapter before us proves that its polar distance was known and measured, as well as its secular variation and the precession of the equinoxes. Their accuracy only was deficient for the want of good instruments: thus in the tables of MUHAMMAD TIZINI published in *Sharpe's SyntagmaDissertationum*, T. HYDE, we find the polar distance of *Judda* in A. H. 940 or A. D. 1533 registered as 26' *further* from the pole than in SIDI'S work, instead of nearer. In general however MAH. TIZINI'S places of the stars lie between SIDI'S and the modern tables. Thus, β Ursæ minoris is

* See Proceedings of the Asiatic Society, page 463 of this volume.

† See note on Maldivé compass, vol. V. p. 764.

respectively 77° , 76° , and $74^{\circ} 49'$ in the three :— α Lyræ, (*vega*), is $38^{\circ} 30'$, $38^{\circ} 37'$ and $38^{\circ} 38'$;—Aldebaran is $11^{\circ} 15'$ (? $15^{\circ} 11'$), $15^{\circ} 43'$, and $16^{\circ} 11'$;—and α Aquilæ $7^{\circ} 0'$, $7^{\circ} 24'$, and $8^{\circ} 27'$ in the *Mohit*, *Mah. Tizini's* tables, and the *Naut. Alm.* for 1839, severally.

I now proceed to make a few remarks on the FIFTH SECTION which affords some curious though brief information on the nautical instruments of primitive use. I certainly imagined that nothing could be more primitive than my Maldive friend's *kamâl*—a bit of horn with a knotted string passing through its centre, depicted in fig. 1, Pl. XLVIII. of vol. V. when lo! here is something even less advanced in ingenuity! Instead of dividing the string and making one board or tablet (*loh*, لوح) answer for all, it seems to have been an anterior plan to have nine boards differing in diameter one finger (*isbâ*) each; the lowest having four *isbâs* in breadth; the largest, twelve. These were all strung on one string, as long as the stretch of a man's arm; and that board was selected in applying the instrument to use, which just covered the space between the star and the horizon. From the passage in the text it is evident that this series of boards was in fact but a substitute for the more primitive employment of the fingers in the measurement of celestial altitude. The fingers had however one advantage,—that stretched at the length of the arm, as radius, they could be placed in a curve, so as to represent equal portions of an arc; whereas when fingers' breadths were transferred to flat wooden boards they became either sines, tangents or, at the best, chords of the angle measured. It was to correct this (as I imagine) that the string was shortened by the thickness of the board (half an *isbâ*?) for each successive *loh*, as they decreased in breadth; and I have taken the trouble to calculate the effect on data furnished by my own arm and fingers, whence I set down—radius = 27 inches; and *isbâ* = $\frac{3}{4}$ inch. The data therefore for each board or *loh* will be as follow:

Radius increasing by half an <i>isbâ</i> in inches.	No. of the <i>loh</i> or board.	Breadth of the <i>loh</i> in inches.	Equal to natural sine.	Angle deduced.	Difference or value of one <i>isbâ</i> .
24.04	1	3.00	.1247	7 10 ÷ 4 =	1 47½
24.41	2	3.75	.1536	8 50	1 40
24.78	3	4.5	.1815	10 27	1 37
25.15	4	5.25	.2087	12 3	1 35
25.52	5	6.0	.2350	13 36	1 33
25.89	6	6.75	.2607	15 7	1 31
26.26	7	7.50	.2856	16 36	1 29
26.63	8	8.25	.3098	18 3	1 27
27.00	9	9.00	.3333	19 28	1 23
Average of 12 <i>isbâ</i>					1° 37' 20"

It is evident that half an *isbd* is a great deal too much for the thickness of the plates or shortening of the string—I have calculated what it ought to be so as to afford the proper correction for the diminution of the sines, and find it only a *twentieth*, instead of *half*, of an inch; thus, making the *isbd* = $1^{\circ} 36' \frac{1}{2}$ we should obtain the following lengths of the arm or radius; the *isbd* being assumed as before at $\frac{3}{4}$ ths of an inch:—

No. of plate or loh.	Angle subtended.	Sine of ditto.	Depth of the loh in inches.	Radius deduced = $D \div \sin. \sqrt{\text{alt.}}$ inches.	Thickness of plate. inch.
1	6°26'	.1120	3.00	26.78	.08
2	8 2	.1397	3.75	26.86	.07
3	9 37	.1670	4.50	26.93	.06
4	11 13	.1945	5.25	26.99	.06
5	12 49	.2218	6.00	27.05	.06
6	14 25	.2489	6.75	27.11	.06
7	16 2	.2761	7.50	27.17	.06
8	17 38	.3029	8.25	27.23	.06
9	19 15	.3296	9.00	27.29	.06

The next instrument described in the fifth section, does not require much notice since, it is precisely the *bilisty*, or square rod with a slide, depicted in Pl. XLVIII., fig. 2. p. 786, and the mode of laying off the divisions agrees with the plan detailed by my *Maldive* informant. There seems however to be some unaccountable jumble of the divided rod (*gaj*) and the knotted string, unless the word translated knot may also signify (as is probable) a division cut on the wooden bar. The application of the breadth of the tablet for measuring lower altitudes with the same knotted string is of course only an approximation, but quite near enough for practice. The zero point (6 *isbas*) is explained to be the lowest altitude of Polaris = $10^{\circ} 30' + 3^{\circ} 30' = 14^{\circ}$; once more nearly conformable with the latitude of *Loheia*.

It is possible that the greater magnitude of the ancient *isbd* may have proceeded from the practice of taking the polar distance of Polaris as a constant of two *isbd*: thus in 1394 it would be $3^{\circ} 52' \div 2 = 1^{\circ} 56'$; in 1550, $1^{\circ} 33'$, &c. Even in the chapter before us hardly any two estimates of the *isbd* agree; in one place 210, in another 224, make 360 degrees; in the division of the *gaj* and string, the measure will be $1^{\circ} 52'$: in other places it is reckoned $1\frac{5}{7}$ degree or $1^{\circ} 43'$.

The FIFTH SECTION enlightens us further on the zero point of the *isbd* scale, which on the former occasion I deduced, from the *isbd* latitudes of places in the Red Sea*, to be $5^{\circ} 30'$ nearly. It says that in taking the altitude of Polaris (always, as I guessed, at the inferior passage) when it comes at last to three *isbd* (the pole being then five *isbd*)

* Vide vol. V. page 444.

the scale ceases, because the star is too near the horizon to give accurate results. Now 3 *isbd* at $1^{\circ} 43' = 5^{\circ} 9'$ to which adding $3^{\circ} 26' = 8^{\circ} 35'$ latitude; and 570 miles, the distance from the equator corresponding, gives a latitude also of about $8^{\circ} 30'$. In the table I constructed from the voyage latitudes I should have added a constant of $3^{\circ} 26'$ to the absolute latitude of each place as the altitudes of Polaris were supposed to be taken at its inferior elevation.

The SIXTH SECTION merely gives directions for calculating the meridional altitude of stars, in order doubtless to obtain the latitude, at sea. Here instead of north and south declination, the term *distance*, quasi *north polar distance* is alone employed; the rule being for stars north of the zenith; *Altitude* = $NP D + \text{Latitude}$; and for those south of the zenith, *Alt.* = $\text{Latitude} - NP D (-90)$ which is unintelligible; it should be *Altitude* = $180^{\circ} - \overline{NP D + Lat.}$; or latitude = $180 - \overline{Alt. + NP D}$. Perhaps by *southern distance* is meant *south polar distance*, when the rule becomes $SP D - \text{Alt.} = \text{latitude}$. The *isbd* is here again quoted at $1^{\circ}43'$ and the importance of having good tables of the stars is insisted on.

I have got through my comment without consulting any native navigator, for the season of Arab and *Maldiv*e monsoons is hardly yet arrived.—But as I have already remarked, the present chapter exhibits far less difficulties than the others did in the absence of this, which contains the very particulars we there wanted.

III.—*Epitome of the Grammars of the Brahuiky, the Balochky and the Panjâbi languages, with Vocabularies of the Baraky, the Pashi, the Laghmâni, the Cashgari, the Teerhai, and the Deer Dialects. By Lieut. R. LEECH, Bombay Engineers, Assistant on a Mission to Kâbul.*

A VOCABULARY OF THE LAGHMÂNI DIALECT.

Introduction.

Laghmân is a province (*mahâl*) of the principality of *Cabûl*, situated opposite to *Jalâlâbad*; it is sometimes written *Lamghân*. It yields a revenue of 1,13,000 rupees, and is included in the government of MUHAMMAD AKBAR KHÂN, the favorite son of AMI'R DOST MUHAMMAD. The inhabitants of Laghmân are Tâjaks or Farsiwâns.

Vocabulary.

Laè, day	Lâm, fort	Lâyâ, brother
Atth, hand	Kati, tree	Warg, water
Kitâlik, girl	Bakâr, good	Â,û, bread
Æe, mother	Vell, night	Gûng, horse
Sâyâ, sister	Bâlâkûl, boy	Ghorâ, horse
Angâr, fire	Bâbâ or tâtiyâ, father	Nâkâr, bad

Nandî, river	Chap, left	Bâr, fruit
Shotik, she-goat	Drogh, false	Akude, below
Lâwegâ, pain	Kam, little	Durâ, out
Lodi, wood	Mandâ, neck	Pâm, broad
Nûni, butter	Baghal, armpit	Kamân, bow
Ave, flour	Pindi, calf	Khâm, raw
Golâng bull	Aneh, eye	Janâwar, beast
Gâs, grass	Kâd, ear	Limbe, tail
Adam, man	Dân, tooth	Pethâr, shoes
Panj, husband	Dâd, beard	Tunâ, thirst
Shelt, knife	Pâ e, leg	Kanâ, deaf
Swran, gold	Chân, back	Kutâ, lame
Pâchadak, he-goat	Podâ, near	Patik, gone
Gâl, abuse	Khek, white	Mâ e, moon
Wâgan, wind	Shûnek, red	Wâkh, rain
Gûlî, bullet	Alinâ, green	Ablî, cloud
Gom, wheat	Kât, bedstead	Sun, hoof
Lon, salt	Chantalâ, small	Pâchh, cotton
Gâ, cow	Châgh, fat	Sonâ, thread
Mâshî, woman	Mutâ, short	Shâmek murch, black pepper
Tik, wife	Kâlâ, cloth	Arûkh, leek
Pul'tem, son	Sutân, trousers	Ko, thing
Chummâr, iron	Khudînk, dog	Shirin, swe et
Mukhrâ, silver	Mâchh, fish	Shidâl, cold
Wâd, stone	Kâr, donkey	Gul, flower
Matht, nose	Dûr, face	Ude, upon
U'kht, lip	Dûr, mouth	Kuchai, in
Jub, tongue	Râst, right	Ligâ, long
Brût, mustachoes	Râst, true	Tîr, arrow
Âst, arm	Bo, much	Pachik, cooked
Kuchh, belly	Shânâ, shoulder	Paranagâ, bird
Dûr, far	Allakh, side	Shâkh, horn
Shâmek, black	Rân, thigh	Kalachâ, speech
Thard, yellow	Sâng, earth	Avtâ, hunger
Nil, blue	Shilâ, mud	Andâ, blind
Chhâl, hair	Thûr, sun	Gungâ, dumb
Gand, large	Dûm, smoke	Chhâ, well
Sannâ, thin	Zalzalâ, earthquake	Aik, come
Ligâ, tall	Gilâph, scabbard	Pâkam, I go
Perânik, coat	Pasham, wool	Pagâ, he goes
Khâdâ, turban	Gambâ, deep	Pâkatha, ye go
Pishûndik, cat	Pyâz, onion	Pâkai, dost thou go
Pe, meat	Pâki, razor	Pâkath, we go
Karatik, female ass	Sûnchik, needle	Pâkan, they go
Shîr, head	Garm, hot	
Norikh, nail	Khargosh, hare	

1 P	6 khe	11 yâ e	16 shânzâ
2 do	7 that	12 duâ,e	17 abdâ
3 te	8 akht	13 seuzdâ	18 hashda
4 châr	9 no	14 chadde	19 nozda
5 panj	10 de	15 panjû	20 vist

A VOCABULARY OF THE CASHGARI (PROPERLY KASHKARI') LANGUAGE.

Vocabulary.

Dāk, a boy	Bughà, be gone	Sùr, head	
Moashî, a man	Rùpà, get up	Kàd, ear	
Lesùn, a cow	Peà, drink	Ghach, eye	
Astor, a horse	Dassà, take	Rikish, beard	
Ashpai, a sheep	U'gh, water	Dond, tooth	
Unth, a camel	Gomb, wheat	Ege, come here	
Chhàni, hair	Gumod, a girl	Hishik, sit down	
Pusha, cat	Kumedi, a woman	Ejube, eat	
Yñch, forehead	Deshawa, a bull	Màth, with, give me	
Naskàr, nose	Ghod dou, an ass	Mashr bà, goglet of water	
Barùp, eyebrow	Pai, a goat	Shàpikà, bread	
Shou, lip	Postam, wool	Karinj, rice	
Legin, tongue	Rain, dog	Mah, waist	
Sirî, barley	Gharib, poor	Pàz, breast	
To kinî, who are you	Jil, veil	Bùm, earth	
Chàdùr, turban	Obistà, dead	Jind, bedstead	
Phadwàl, trousers	Zúm, mountain	Satàre, stars	
Chihàn, take off (im- perative)	Ingàr, fire	Paghîd, curds	
Bizwa, thin	Chohistam, I am hun- gry	Paniyà, night	
Pong, foot	Ishgum, shall I eat	Dashmànirà, read	
Shuràk, thigh	Màsam lùdath, speak with me	Metàl, a great man	
Khwànù, belly	Kisht, waistband	Màwlàt, country	
Gaul, neck	Peràhan, coat	Kosh, shoes	
Trishty, thirst	Anjam, put on (impe- rative)	Jinwà,î, born	
Àsmàn, heaven	Chale but, a fat man	Ult, round	
Shid, milk	Husht, hand	Him, snow	
Chho,î, day	Mujasti, calf of leg	Jin, wood	
Dashmànî, reading			
Ange, come			
1 I'	4 chod	7 sùt	10 jash
2 jù	5 pùnj	8 ànsht	20 jishî
3 trù,î	6 chù,î	9 neñhan	100 do shùm

A VOCABULARY OF THE TI'RHAÏ DIALECT.

Introduction.

The *Tirhai* language is at present confined to 3000 families, who abandoned their own country the district of *Tirà* on a feud breaking out between the Orakzais and Afridîs, and settled in the province of *Ninganhàr*. They figured in the religious revolution I am now about to mention.

In the reign of AKBER, when MIRZA HASN was Governor of *Cabùl*, a holy man by name HISAMODI'N an Ansàri by caste came from Hindustán, where his forefathers had been left by TIMURLANG, to *Afghanistán* in which country he travelled and preached, and had succeeded in making many converts to the creed of the Shíahs, to which sect he belonged; when AKHUN DARVEZA whose shrine is now at *Peshàwar*, arose

as his opponent, and as the defender of the orthodox faith of the Sunnîs: HISÁMODI'N had obtained the title of PÍ'R ROSHAN (father light) among his own sect, and that of PÍ'R TARÍ'K (father darkness) among the Sunnîs. AKHUN DARVEZA petitioned the king who gave orders to the governor of *Cabûl* to co-operate with him in exterminating the infidel Shíahs. These two laid many snares to entrap their opponent, who evaded their pursuit, accompanied by a body of 200 cavalry, by reversing the shoes of their horses. He escaped and his fate is not known; but his three sons were secured and put to death. The labors of PÍ'R ROSHAN were particularly successful in the district of *Tirá*, where he had 60,000 disciples; who on the disappearance of their preceptor, returned to their former belief.

Vocabulary.

Kuzrà, horse	Tsîmbar, iron	Mùn, face
Bhadai, mare	Zyad, brass	Ázi, mouth
Pàli, bread	Postakai, leather	Màs, meat
Wà, water	Parannazar, silver	Nukh, nail
Sinth, river	Luhizar, gold	<i>Khwai</i> , right
Das, day	Bat, stone	Chap, left
Ràt, night	Achha, eye	Tsuk, little
Bir ùth, he-camel	Nasth, nose	Brokh, much
Strîzy ùkh, she-camel	Kaṇ, ear	Ogà, shoulder
Bîra tsinda, he-goat	Shunda, lip	Mare, neck
Strîzy tsàli, she-goat	Danda, tooth	<i>Allakh</i> , side
<i>Ghwar</i> , good	Zhibba, tongue	<i>Kharg</i> , armpit
Nàkàr, bad	Bret, mustachoes	Rèṇ, thigh
<i>Ghodi</i> , abuse	Hast, hand	Ponḍi, calf of leg
Bàli, wind	Pà, leg	Brich, tree
Nâr, fire	Tsat, back	Bhùm, earth
Laḍà, wood	Damma, belly	Gaḍ, mud
<i>Brekh</i> , pain	Boga, near	Dàda, dust
Tarwali, sword	Dùr, far	Spagmai, moon
Dâl, shield	Paranna, white	Sùri, sun
Golai, bullet	Luhî, red	Barsât, rain
Dudh, milk	Zyad, yellow	Dhùng, smoke
Kuchh, butter	Kangana, black	U'ryaz, cloud
Gadh, clarified butter	Seṇ, bedstead	Zabzalà, earthquake
Ghom, wheat	Bàl, hair	<i>Ghwar kand</i> , thunder
Dàdi, beard	Sùdà, little	Tandr, thunderbolt
Zav, barley	Ghaṇa, large	Padakahàr, lightning
Lon, salt	Plan, fat	Nùkh, hoof
Go, bullock	Sùm, thin	Kavza, hut
Dhen, cow	Kathau, short	Tekai, scabbard
Ghàs, grass	Driga, tall	Mâlùch, cotton
Strîzy, wife	Tsabar, cloth	Pam, wool
Mhala, father	Piran, coat	U'zh gumî, goat's hair
Mà, mother	Sathan, trousers	Zmarrai, tiger
Putur, son	Phagdai, turban	Gùgh, deep
Kumâr, daughter	Sanà, dog	Kangana mirch, black pepper
Spaz, sister	Bilolec, cat	Sùm, leek
Bhrà, brother	Màhai, fish	Pyàz, onion
Katàri, knife	Khar, donkey	

Kurkumand, saffron	Bizo, monkey	Udhast, hunger
Spansi, thread	Àth, flour	Gushthani, house
Biyàtai, scissors	Gul, flower	Tandrai, mouse
Katari, razor	Bàr, fruit	Hindwànà, water-melon
Shai, thing	Phallà, grain	Ràgha, plain
Dhùng, needle	Drig, long	Kàrgħa, crow
Mrikht, sweet	Plaṅ, broad	Morgha, bird
Tre, salt	Għasha, arrow	Kħka, horn
Trikht, bitter	Għurr, kamàn, bow	Phanai, shoes
Tattà, hot	Rast, true	Piratha, thirst
Shhal, cold	Drist, false	Osai, deer
Sawe, hare	Pakkà, cooked	Ku,ai, well
Burod, wolf	Àma, raw	Għar, mountain
Gidad, jackal	Rassai, rope	Bħaṅa, plate
Yaya, bear	Lakai, tail	
1 ík	7 sath	13 tro
2 dù	8 àkht	14 tsoudà
3 trà	9 nab	15 panzî
4 tsor	10 dah	16 khod
5 pànts	11 íko	17 sato
6 kħo	12 bo	18 akhto
		19 kunnai
		20 bhyà
		30 bhyoudà
		40 dù bhyà

A VOCABULARY OF THE LANGUAGE, SPOKEN IN THE HIGHLANDS
OF DEER.

Vocabulary.

Pand pishà, show the road	Chù ain pand, go this road
Pùch de, give a kiss	Buchhàkot, I am hungry
Maga, don't	Dàt, full
Shilchà oth, I am thirsty	Paneth, money
Bàl, hair	Jàth, wool
Ghat ag, whence have you come?	Andeshkì chon, I will go there
Andefhtàg, I came thence	Gomb, wheat
Jib, tongue	Shid, milk
Masht, throat	Gaḍ, clarified butter
Shalit, will you sell?	Ma,il, buttermilk
Màyà, curds	Chond, writing
Chot, cheese	Chantù, alive
Bat, rice	Àn, bring
Mulland, dead	Jàl, light (imperative)
Pedàh, ill	Pisht, flour
Kichù, take away	Wàhe, water
Pachhà, cook (imperative)	I's, woman
Go il, bread	Po, drink
Mish, man	Chau, begone
Khà, eat	Uthi, get up
Shàyà, come	Goḍ, horse
Beh, sit	Gau, bull
Jolà, speak	Tìkoḍ, girl
Gà, cow	Mekide, give me
Angyür, finger	Rà,it, might
Mùlkanth, buying	Chail, goat
	Birbùr, tiger
	Màs, meat
	No,il, cap
	Shàh, put on (imperative)
	Yàr, friend
	Jàr, fight
	Màr, kill
	Tàran, forehead
	Dàdh, lip
	Dà,ir, chin
	Kħasha, cheek
	Thoho, hand
	Jang, calf of leg
	Gabit, anus
	Jolà, speech
	Pù, son
	Għin, take
	Dùs, day
	Roups, musk deer
	Shirmukh, hyena

Yù, barley	Migar, joy	Shîsh, head	
Gujur, clothes	Achhî, eye	<i>Khor</i> , foot	
Shirbâl, trousers	Nistûr, nose	Erkas, breast	
Sî, sew	Kan, ear	Us, strike	
<i>Ghalim</i> , enemy	Dand, tooth	Tîng, back	
1 Yak	6 <i>sho</i>	11 ikà	16 shohud
2 do	7 shat	12 biyâhâ	17 satâha
3 <i>shta</i>	8 hasht	13 <i>sheltâha</i>	18 hastâha
4 chor	9 nob	14 chohâ	19 unbîst
5 pânch	10 dash	15 panchi	20 bis

A VOCABULARY OF THE LANGUAGE OF THE MOGHAL AIMAKS.

Introduction.

The Moghals are one of the four Aimaks; they inhabit the country of *Baghrân* and *Mai igân*, the former is subject to *Candahar* the latter to *Herat*.

A story is told that one of the kings of *Persia* sent for a Moghal Aimak, to inquire the structure of his language, and was so disgusted with the discordancy of its sounds that he ordered the man to be killed.

While the executioners were preparing to strike off his head, the king, to give the culprit a last chance, inquired the Moghalî for "face." The man answered "*nûr*" which in Persian signifies "light:" this lucky answer it is said saved the credit of the Moghal language and the head of its propounder or lecturer.

Vocabulary.

Odur, day	Ahin, iron	Surab, lead
Sonî, night	Bizû, monkey	Brinj, brass
Nârân, warmth	Chinâ, wolf	Tilla, gold
<i>Ghar</i> , hand	Nokai, dog	<i>Nukhrâ</i> , silver
Kouu, boy	Buz, goat	Kul, food
Wokin, girl	<i>Saghal</i> , beard	Gesal, belly
Bâbâ, father	<i>Saghigh</i> , sheep	Kabr, nose
Turuksan, brother	Ukarr, a bull	Nuddun, eye
<i>Khwâr</i> , sister	Wînâ, cow	Kelan, tongue
Ussun, water	<i>Sughul</i> , a calf	Kala, chin
<i>Ghâr</i> , fire	<i>Bughdai</i> , wheat	Undun, trousers
Ukpang, bread	Arpa, barley	<i>Kilghâsùn</i> , wool
Shahar, city	<i>Ghurul</i> , flour	Nakâ, shoes
Deh, village	Chighân, rice	Girr, house
Darakht, tree	Anâr, pomegranate	Kongân, light
Morin, horse	Angûr, grapes	Ulan, red
Morin, mare	Pyâz onion	Kokâ, green
Nakchîr, deer	Sir, leek	Shîra, yellow
Eljigân, ass	Zardak, carrot	Burghâja, cooked
Murgh, fowl	Dapsuny, salt	Ould, blind
Teman, camel	Tosùn, clarified butter	Ukubâ, dead
Wataga, bear	<i>Khâgina</i> , egg	Nira, name
Sunu, milk	Tarakh, curds	Yamal, saddle
Unda, butter-milk	Kagar, earth	Oulâ, hill

Khisht, brick
 Oda, above
 Dunda, in
 Indar, here
 Javlà, before
 Ghimsù, nail
 Ekin, head
 Chakin, ear
 Nùr, face
 Shuddun, tooth
 Kela, speech
 Kujunn, neck
 Gesù, hair
 Malghai, cap
 Khatun, woman
 Kor, breeches tie
 Sâmân, grass

1 nikka
 2 koyar
 3 ghorban
 4 dorban

Chaghàn, white
 Kàrà, black
 Mor, road
 Khàm, raw
 Lang, lame
 Ebat, pain
 Chah, well
 Kulba, plough
 Ghajar, plain
 Khirja, hut
 Shewa, below
 Ghadama, out
 Tindar, there
 Koinà, after
 Khùb, good
 Watar, quick
 Bad, bad

Uchkodar, yesterday
 Kùri, stone
 Kejà, wheu
 Enakai, now
 Hân, yes
 Yema, why
 Be, I
 Te, he
 Inodar, to-day
 Nuntar, sleep
 Modun, wood
 Khanà, where
 Bas, enough
 Ogai, no
 La, not
 Chì, thou
 Ekada, many

5 tábun
 6 jolàn
 7 jurghan,
 &c. &c.

Verbs.

Ira, come
 Ida, eat
 Buz, rise
 Barre, catch
 Bi nîwla, don't cry

Ap, take up
 Umaz, put on
 Orchì, go
 Sou, sit
 Hug, heat

Hàlà, kill
 Guilya, run
 Tali, put
 Unnù, mount

Sentences.

Nàm chi yama bi
 Kedù turuksan betar
 Kaun indai îra
 Bâzâr tû horchi sùn hàcharà bi-
 dandù
 Malghai non yemagaja lon masu-
 ninchi
 Kanaur chí nantar
 Gà buz
 Ghar mence ebatunna
 Umur tamkedù sâl be
 Indasa ta Cabùl kedùr mor be
 Ordà màni koyàr rupe kocharpà
 Katai màni uirainî Halim Jan be
 Morini tâni kîmatnî kedù be
 Indasa tâ farrah mornî kirainî kedù
 be
 Bâbâ tâni àmdun be
 Àmdun ogai be ena ghorbàn sal bekî
 oknjà
 Turuksan màni tâni nantar
 Chaghàn bulja saghal manî
 Bidanasai yam gaji kâshuda janta
 Nazar tûmî nîran kî modr barish
 ikina
 Agarchi khlàs ugai bechî turuksan
 raikî

What is your name?
 How many brothers have you?
 Come here, boy.
 Go to the bazar and bring me some
 milk.
 Why don't you wear a new cap?
 Where are you going?
 Rise early.
 My hand pains me.
 How old are you?
 How far is Cabùl from this?
 I have two rupees left.
 Halim Jan is the name of my chief.
 What is the price of your horse?
 What is the hire of a horse from
 this to Tarrah?
 Is your father alive?
 He is not alive, he died 3 years ago.
 Do you know my brother?
 Your beard has turned grey.
 Why are you angry with me?
 It looks as if it would rain to-day.
 If you are employed send your bro-
 ther.

Walka satâni gham into barîna	How are you taxed in your country ?
Nikka odurton kedû mor orchî nanta	How far can you go a day ?
Morni yamal ke ki unusunna	Saddle the horse that I may take a ride.
Odur begâ burja boz ki warchi ena	The day is far spent rise and let us go.
Eîda îra labda khîsmat tortani enaka	I came to wait on you, now give me
rukhsat kîtûnî ki warchya gîrtuna	leave to go home.
Dundadû manî kudal beyagaga	Let there be no deceit between you and me.
U. dûi dundânijî âwâza bila ka	There was a report in the camp
Muhammad Shah ûkujanna	that Muhammad Shah was dead.
Eljiganîn mâni uchkan sonî kulaghai	Yesternight a thief stole an ass of
achiebanna ; daisunni katkair yat-	mine by cutting his tether ; the
trajane nikka mehmân bila teni	thief also stole an ass of a guest
eljiganîn kulaghai achichanna	of mine.

IV.—*Note on the New Zealand Caterpillar.* By G. EVANS, Esq.
Curator of the As. Soc. Museum.

After a careful scrutiny of the New Zealand caterpillar entrusted to my charge at a former meeting and on which I was requested to report as to the precise, or most probable nature of the remarkable and apparently anomalous connection existing between the animal and the vegetable fibril projecting from its head (an extraordinary feature in the economy of this curious insect that has led to the fanciful belief that we have here an unequivocal instance before us of animal and vegetable life linked together in one continuous existence) I am led to the following conclusions.

That the caterpillar, the subject of our speculations and present inquiry, is the larva of a lepidopterous insect, that contrary to the general law of its own order, it neither fabricates a cocoon, nor constructs any kind of defence to protect itself from injury for the time it has to continue in the aurelia or chrysalis state, but as some provision is doubtless necessary for its future preservation, to enable it to fulfil its destiny as intended by nature, it resorts to another expedient equally efficacious and tending to the same wise and beneficent ends, and this is by artfully suspending itself by the head from some part of the tree or plant on which it feeds, in which pendulous state it continues stationary and undergoes its natural metamorphosis.

The manner by which it contrives to attach itself to the slender tendril, (or vegetable fungus as some have considered it,) and which is truly pure vegetable matter, and a continuous part of the same tree it derives its support from, appears to be simple and easy of explanation,

and, if I am right in my solution of the mystery, it is effected in the following way.

A twig or tendril of the tree, or more probably a climbing plant, on which it subsists in the larva state, having been selected for its purpose, the caterpillar smooths off the end with its sharp mandibles and thus forms a clean and even surface to proceed upon. It then splits the bark and vegetable fibres for a short distance up the stem, separates the divided portions and insinuates its head between the intervals so formed, leaving the divided ends to close over and by their compressing force to retain the head in a fixed position, when by the aid of a kind of gluten plentifully supplied from all parts of the body, and apparently possessing the properties of caoutchouc, the two dissimilar bodies are firmly glued as it were into one; in this vertical posture I conclude the transformations from one stage to another pass on, till the imago or winged form is assumed. Beyond the idea of mechanical support on the one hand and self-preservation on the other inherent throughout all animated nature, it is difficult to assign to this curious appendage any other more suitable office, and what would seem to give some support for this conclusion is my having detected what has every appearance of being the divided and radiating fibres of the stem, extending over the head of the caterpillar as before explained, but the specimens are in such a dried and unfit state for an investigation of this nature, that I can only offer what I have here stated as a provisional exposition to be confirmed or invalidated by more competent persons, whose advantages may afford a fuller scope for their investigations: to suppose that animal and vegetable matter, each possessed as we know they are of different and distinct properties, (though both composed of the elements of common matter,) can ever become continuous and co-existent is irrational and contrary to the common laws of nature, for the changes and operations that take place within themselves separately and individually, are too widely diversified ever to admit of such a relation as the one here erroneously conceived.

Sept. 3rd, 1838.

Note.—EDWARDS, in his *Gleanings of Natural History*, a work published above 70 years ago, mentions an insect that was brought from *Dominica* and of many more found at the same place, having a fungus shooting from the head, but he gives no solution of the extraordinary phenomenon.

V.—An examination of the Páli Buddhistical Annals, No. 3. By the Hon'ble GEORGE TURNOUR, Esq. Ceylon Civil Service.

[Continued from page 701.]

Concerning the four BUDDHÁ of this kappo.

Extracts from the Atthakathá called the Maduratthawilásini on the Buddhawanso, which is the fourteenth book in the Khudakanikáyo of the Suttapítako.

The *Buddháwanso* purports to be the narrative of the history of the last twenty-four Buddha who have appeared during the last twelve regenerations of the world; and, as will be shown by the ensuing quotations, it was delivered by SÁKYA himself in the first year of his Buddhohood, for the purpose of convincing his royal kinsmen, that the mendicant life he was leading ought not to be regarded by them in the light of a degradation.

In this instance also, for the reasons explained, I give the preference to the *Atthakathá*. The following are the names of the twenty-four Buddhá exclusive of SÁKYA, and the age in which each appeared, of whom the text and the commentary treat.

In the 12th *kappo* from the present one, four Buddhá appeared, the last of whom was DÍPANKARO, the 1st of the twenty-four alluded to above.

In the 11th ditto; 2nd, KONDANNO.

In the 10th ditto; 3rd, MANGALO; 4th, SUMANO; 5th, REWATO; 6th, SOBHITO.

In the 9th ditto; 7th, ANOMADASSI; 8th, PADUMO; 9th, NÁRADO.

In the 8th ditto; 10th, PADUMUTTARO.

In the 7th ditto; 11th, SUMEDO; 12th, SUJATO.

In the 6th ditto; 13th, PIYADASSI; 14th, ATTHADASSI; 15th, DHAMMADASSI.

In the 5th ditto; 16th, SIDATTHO.

In the 4th ditto; 17th, TISSO; 18th, PHUSSO.

In the 3rd ditto; 19th, WIPASSI.

In the last ditto; 20th, SIKHI; 21st, WESSABHU.

In the present ditto; 22nd, KAKUSANDHO; 23rd, Ko'NÁGAMANO; 24th, KÁSSAPO; GÓTAMÓ, METTEYYO, who is yet to appear.

As however, this article is only designed to advert to events connected with the present creation, I shall commence with the history of the KAKUSANDHO, after giving a few of the introductory observations fur-

nished by BUDDHOGHOSO at the commencement of his commentary on the *Buddhawanso*. He thus expresses himself.

“ By whom was this (*Buddhawanso*) propounded? Where, on whose or what account, and when was it delivered? Whose discourse is it, and how has it been perpetuated?

“ In the first instance, concisely explaining all these points, I shall then enter upon a detailed commentary on the *Buddhowonso*.

“ By whom was this *Buddhawanso* propounded? It was propounded by the supreme Buddha, who had acquired an infallible knowledge of all the *dhanmá*, who was gifted with the ten powers, who had achieved the four *wesarójjáni*, was the rája of *dhanmá*, the lord of *dhanmá*, the omniscient TATHA'GATO.

“ Where did he propound it? He propounded it at the great city *Kapilowatthu* at the great *Negródho wiháro*, in the act of perambulating on the *Rotonuchankamo*, which attracted the gaze of *dewa* and of men by its pre-eminent and exquisite beauty.

“ On whose account? He propounded it for the benefit of twenty-two thousand kinsmen, and of innumerable *kótiyo* of *déwo* and men.

“ On what account? He propounded it that he might rescue them from the four *Oghá* (torrents of the passions).

“ Where did he propound it? BHAGAWA, during the first twenty years of his Buddhohood led a houseless life (of a pilgrim), sojourning at such places as he found most convenient to dwell in; viz. out of regard for *Báránasi* he tarried the first year at the *Isipatonan*, an edifice (in that city) near which no living creature could be deprived of life,—establishing the supremacy of his faith, and administering to eighteen *kótiyo* of bráhmans the heavenly draught (*nibánan*). The second year, he dwelt at the *Wélucano mohá wiháro* in *Rájagahon* for the spiritual welfare of that city. The third and fourth years he continued at the same place. The fifth year, out of consideration for *Wésoli* he dwelt in the *Kutógára* hall in the *Maháwono wiháro* near that city. The sixth at the *Mokulo* mountain. The seventh at *Tuwa-tenso Bhawono* (one of the *Dewalóko*). The eighth year, for the welfare of the *Sonsumára** mountain near *Bhuggo*, he dwelt in the wilderness of *Bhésokala*. The ninth year, at *Kósombia*. The tenth year, in the *Paraleyyyoko* wilderness. The eleventh year, in the brahman village *Nálá*. The twelfth at *Wéranjo*. The thirteenth at the *Chali* mountain. The fourteenth at the *Jétowono Moha wiháro* in *Sáwatthipura*. The fifteenth at the great city *Kopilowatthu*. The sixteenth at *Alawi* subduing *Alowoko* (an evil spirit); and administering the heavenly draught to eighty-four thousand living creatures. The seventeenth at *Rajagohan*. The eighteenth at the *Choli* mountain. The nineteenth at the same place, and he resided the twentieth at *Rajagohon*. From that period he exclusively dwelt either at the *Jétawano maha wiháro* for the spiritual welfare of *Sáwatthipura*, or at *Pubbárámo* for the welfare of *Sákétopura*, deriving his subsistence† by alms (from those cities).

* *Sunsumára* is synonymous with *Kapilo*, in Singhalese *Kimbulwotpura*, the birth-place of GOTOMO BUDDHO.

† In those days, Buddhistical religious institutions possessed no endowments, and the priesthood entirely subsisted on alms. It is stated to be mentioned elsewhere, though the passage has not been shown to me yet, that the period of SA'KYA'S sojourn at *Sáwatthipura* was nine, and at *Sákétupuro* sixteen years. By residence however, at any place is not to be understood an uninterrupted residence of the whole year, The year is divided into the *hémanto* (snowy or cold), *gemháno* (hot) and *wassono* (rainy). During the two former the Buddhist priesthood were required to devote themselves exclusively to a life of pilgrimage, and in the last, to have a fixed abode

“ On SATTĀ (the divine teacher SAKYA) becoming BUDDHO, he held his first *wasso* at the *Isipatanan* an edifice situated at *Báránasi* at a place so secluded that no wild animal was disturbed; and having completed his *wasso* there, repaired to *Uruwéla* where he tarried three months. Having there converted the three *Jatilians* who were brothers, attended by his fraternity of a thousand bhikkhus, he proceeded to *Rájagahan*, on the full moon day of the month of *Maga**, (January-February); and there sojourned two months. Five months had then elapsed, since his departure from *Báránasi*. The *hémanto* was also over; and it was also seven or eight days after the arrival of the emissary † UDA'VI. That individual in the month of *Phaguno*, (February-March,) thus thought ‘the *hémanto* is past, and the *wasanto* (first half of the hot season) is arrived; and it is the time TATHAGATO promised to repair to *Kapilawatthu*.’ Having thus reflected, he set forth the gratifications of a visit to his native city in a poem of sixty verses (to BUDDHO).

“ Thereupon SATTĀ', on his hearing this appeal, disposed to gratify the wishes of his relatives, attended by ten thousand (*bhikkhus*) of various tribes, from *Anga* and *Magadha*, and by ten thousand from *Kapilawatthu*, being altogether twenty thousand sanctified *arahanta*, set out from *Rájagahan*. By only travelling daily at the rate of one *yójana* ‡, he reached the city of *Kapilawatthu*, which is distant from *Rájagahan* sixty *yójaná*, in two months: and in order that he might command the reverence of his relations, he performed a miracle of two opposite results. It was upon this occasion, that he propounded the *Buddhawanso*.

“ Whose discourse is it? It is the discourse of the Supreme BUDDHO, who is not to be compared with the priesthood, and the *Pachchi Buddhá*.

“ By whom has it been perpetuated? It has been perpetuated by the generation, or unbroken succession, of the *Thérá* (elders of the priesthood). This is that succession: SARIPUTTO théro, BHADDAJI, TISSOKOSYAPUTTO, SIGGAWO, MOGGALIPUTTO §, SUDATTO, DHAMMIKO, DASAKO, SONAKO, REWATO. By these it was brought to the period when the third convocation was held.

“ If it be asked, how has it subsequently (to the third convocation) been perpetuated by their disciples? Be it understood, that in the same manner, it has been brought down to the present day, by the transmission from preceptor to disciple.

“ By thus much explanation alone, it will be understood, by whom, where, for whose edification, on whose account, and when it was propounded; whose discourse it was, and by whom it has been perpetuated. It now behoves unto the expounder of this commentary, to enter upon his general explanation (of his work).

“ This *Atthawanáná* is the (*nidánon*) repository of the history in part of a remote antiquity; in part of comparatively modern, and in part of contemporaneous

charging themselves with certain stationary religious duties. Though the Buddhist priests have lost in *Ceylon* much of their mendicant character, from the age in which their temples became endowed with lands, the observance of *wasso* is so far preserved still, that every priest of any repute is in general invited by some wealthy individual, or by a community, to take up his residence at some selected place for the *wassáno*, where he is provided with an habitation and his subsistence, and is treated with great respect.

* The text gives *Russamaso* (December-January), which is considered to be a clerical error.

† An emissary from *Kapilawatthu* sent by SUDDHODANO, the father of BUDDHO, to entreat of him to be respectably maintained by his family, instead of leading the life of a religious mendicant.

‡ About 16 miles.

§ Not MOGGALIPUTTATISSO by whom the third convocation was regulated.

events. The illustration of these three portions of the history, in a manner to be readily comprehended, would be an important work. Those who attend thereto and acquire a knowledge thereof from the commencement would lay up a store of valuable knowledge. I shall therefore enter upon the exposition of these *nidánáni*, rendering (their imports) manifest. Therein (in the study of this exposition) due notice should be taken of the division of the three *nidánáni*.

“The nature (of the three *nidánáni*) may be thus briefly explained: the history extending from the age in which the sacred assurance was vouchsafed to the *Mahisatto** at the feet of DI’PANKARO Buddha, until by his death in the character of WESSANTARO, he was regenerated in the *Táwatinsa déwálóko*, is called the *Duré-nidánán* or the history of remote antiquity. The history extending from the translation by death from *Táwatinsa* to the attainment of omniscience at the foot of the *Bodhi*, is called the *awiduré-nidánán* or comparatively modern history. The contemporaneous history contains records such as this, ‘at such a period BHAGAWA’ dwells at *Sáwatthi*, at the *Jétavanno* wiháro, an edifice belonging to ANATHO, a dispenser of charity:’ ‘he dwells at *Rájagahan* at the *Wétuwano* wiharo (the wiharo in a bamboo grove) at which the squirrels are regularly fed,’ ‘he dwells at *Wésáli* in the *Kútágára* hall in the great wilderness.’ In this manner whatever intervenes from the attainment of omniscience at the foot of the *Bódhi* tree, until his deathbed (scene) in obtaining *mahá parinibbánan*, whatever takes place in the interval, be it understood that wherever he may have tarried, is included under the *santiké-nidánán*, resident or contemporaneous history. In these few words an explanation exclusively of three *nidánáni*, viz. *duré*, *awiduré* and *santiké* has been afforded.”

I now proceed to quote from the *Atthekathá* on the *Dwéwisti-budhawanso* or the genealogy of the twenty-second *Buddhá*.

“From the *kappo* in which the *Syambhu*, WESSABHU, attained *parinibbánan* during twenty-nine *kappé*, no luminaries‡ like suns, the vanquishers of darkness, appeared. In this present *Bhadda kappo*§ four *Buddhá* have already appeared; viz. KAKUSANDHO, KONA’GAMO, KASSAPO and our own Buddha (GO’TAMO). The *Bhagawá Metteyyo* will be born hereafter. As this *kappo* is destined to comprize the manifestation of five *Buddhá*, it has been designated a *Buddha kappo* by BHAGAWA’.

“Of these, KAKUSANDHO having fulfilled his probationary destinies, and been regenerated in the *Tusitapura* (*Déwálókó*), after death there, he was conceived in the womb of WISAKHA the principal wife of AGGIDATTO, the *Prohitó* brahman, who was the instructor in the tenets and doctrines of his faith, of the raja KHE’MO in the *Khémanagara*.

“Whenever rájas uphold, reverence, make offerings and render homages to, the brahmans, the *Bódhisattá*|| are horn in the brahman tribe; and whenever the brahmans uphold, reverence, make offerings and render homage to the rájas, then they are born in the rája tribe.

“At this period the brahmans were receiving the services and homage of the rájas, and on that account the illustrious personage, who was the true KAKUSANDHO was manifested in a pure brahman tribe, endowed with prosperity and greatness, causing the hundred *Chakkawaláni*, of which the perishable universe is composed,

* The name of Buddha prior to his attaining Buddhohood, literally “the great mortal.”

† Vide *Mahawanso*, p. xxxii.

‡ Supreme Buddha.

§ From the root *Bhaddi* excellence.

|| Individuals destined to be supreme Buddha.

to glorify him, and to quake (with joy) ; and, in the manner before described, miracles were performed.

“ At the termination of ten months, he issued from his mother’s womb, like a flame of fire from a golden furnace, and lived the life of a layman, maintaining domestic relations for four thousand years. He had three palaces called *Ruchi*, *Suruchi* and *Wudhaná* ; and an establishment of thirty thousand females, of whom the brahman RÓCHINI was his principal consort.

“ Having (already) been visited with the four prescribed warnings, at the birth of his illustrious son UTTARO by the brahman RÓCHINI, he took his final departure, in his state car drawn by six high bred horses, and entered into the priesthood :—in pursuance of whose example forty thousand persons also entered into the priesthood.

“ Attended by them, having for eight months undergone the probationary ordeals, on the full moon day of the month of *Wésako*, having partaken of the sweet rice boiled in milk for him by the daughter of the brahman WAJARUDO, in the brahman village *Sucharindo* ; and having taken his noon rest in the *Khadira* wilderness, in the afternoon, accepting from one SUBHADDHO, a corn-grower, eight handfuls of grass, and approaching the *Sirisa* (the *sirisa acacia*) his sacred tree, which was exhaling a heavenly fragrance similar to that of the *pálali* before described, and spreading out a sward carpet thirty-four cubits in breadth, seating himself on that throne he achieved supreme Buddhohood.

“ Having chaunted forth the *uddnan* (hymn of joy) and passed there seven times seven days, satisfying himself that the forty thousand bhikkhus who had been ordained with himself were qualified to comprehend the *sachapañiwédé* (the four sublime truths of Buddhism), he repaired in a single day to *Isipatanan*, an edifice near which no living creature could be deprived of life, situated in the neighbourhood of *Makhilana-gara* (*Benares*), and in the midst of those disciples he proclaimed the supremacy of his faith.”

After detailing some further particulars of the early acts of KAKUSANDHO the commentary proceeds thus :

“ At that period our *Bódhisatto* (SAKYA) existed in the person of the (reigning) monarch named KHEMO ; and presented alms, dishes, robes and (other) established alms-offerings to the priesthood of whom the Buddho (KAKUSANDHO) was the chief ; and provided sandal-wood and medical drugs, bestowing also sacerdotal gifts. Attending to his doctrinal discourses he became a convert (to Buddhism) and was ordained a priest in the fraternity of that Bhagawa. The divine teacher (KAKUSANDHO) predicted to him that he would hereafter, within this *kappa*, himself become a Buddho.

“ The native city of this enlightened KAKUSANDHO Bhagawa was *Khémanganaran* : his father was the brahman AGGIDATTO and his mother the bráshman WISAKHA. His chief disciples were WIDHURO and SANJINO : his *Upattháyako* (assistant disciple) was BUDDHIYO ; his two chief priestesses were SAINA and CHAMPACHA ; his sacred tree the *Mahasírta* : his stature forty cubits, the effulgence of his glory extended ten *yójaná* around ; the term of his existence was forty thousand years ; his consort (while he was a layman) was the brahman ROCHINI ; his son UTTARO, and he departed (on severing himself from lay connections), in his car drawn by horses of the *ajanna* breed.”

Then follows a metrical repetition of the foregoing particulars quoted from the *Buddhawanso* itself, and other details connected with KAKUSANDHO to the end of that chapter, which it is unnecessary to adduce in this place.

The genealogy of the twenty-third Buddha.

“ Subsequent to KAKUSANDHO Bhagawá and to the extinction of his religion, when the term of human existence extended to thirty thousand years, the divine sage KONA'GAMANO, whose heart was always benevolently inclined to others, was manifested.

“ It might appear from this statement that the term of human existence was gradually curtailed; but such was not the case. Be it understood, that it had been curtailed, and having been augmented was again reduced. For example in this *kappo* the Bhagawá KAKUSANDHO was born, whose allotted term of existence was forty thousand years. That term of existence gradually decreasing was reduced to a term of ten years; and subsequently increasing again to an *Asankheryyan*, and from that point again diminishing, had arrived at the term of thirty thousand years. Be it understood, that it was at that conjuncture that the Bhagawá KO'NA'GAMANO was born. That personage having fulfilled his probationary courses, and been regenerated in the *Tusitapura Déwaloko*, and having demised there, was conceived in the womb of UTTARA', a lovely and youthful brahmaní, the consort of the brahman ANNADATTO of the city *Sóbhawatte*; and at the termination of ten months issued forth from the womb of his mother, in the *Sóbhawatte* pleasure garden.

“ At the instant of his birth, throughout *Jambudípo*, a golden shower (*kanakawasśín*) descended; and from that circumstance he acquired the appellation of KANA-KA'GAMANO, which name of his, by process of change, became KO'NA'GAMANO.

“ He lived in the domestic relations of a layman for three thousand years, and he had three palaces, *Tusitá*, *Santasita* and *Santuttho*, and sixteen thousand women, of whom the brahman RUCHIGANTHA' was his principal consort. Having been visited by the four prescribed-warnings, on the birth of his son SATTAWA'HO by RUCHIGANTHA', mounting his superb state elephant, and taking his final departure (from wordly grandeur) he entered into priesthood; and his thirty thousand followers following his example, also entered into the sacerdotal order.

“ Having for four months (singly) undergone the probationary ordeals, and having on the full moon day of the month of *wesako*, partaken of the rice sweetened by being boiled in milk, which was offered to him by the daughter of the brahman AGGISE'NO, and enjoyed his noonday rest on the *Khadira* forest, in the afternoon, accepting the eight bundles of grass which were presented to him by TINDUKO, a cultivator,—approaching (unattended) from the southward his sacred tree, the *udumbaro*, (*Ficus glomerata*)—which was adorned with fruit as described in the instance of the *pundarika* tree,—and spreading out a sward carpet twenty cubits in breadth, seated on that throne, he annihilated the power of death, by attaining the wisdom of the ten powers (Buddhohood) and he chaunted forth the *Udanan*.

“ Passing there seven times seven days, and having by his inspiration seen the proficiency of the thirty thousand bhikkhus who were ordained at the same time as himself,—rising aloft into the air he descended at the *Isipatanán* near the city *Sudassanó**.

“ Alighting in the midst of them, he proclaimed the supremacy of his faith; and on that occasion he procured for a thousand *kótiyo* of living beings the first stage of sanctification. Subsequently performing a miracle, productive of two conflicting results, at the foot of the great *sálo* tree, at the gate of *Sundaranagaran* he administered dhammo, the draught of heaven, to twenty thousand *kótiyo* of living beings; and procured for them the second stage of sanctification; and on the occasion of this Bhagawá expounding the *Abhidhanmopitako* to his mother UTTARA' and the *dévata* of the hundred thousand *Chakkawaláñi*, who had assembled for that purpose, ten thousand *kótiyo* of living beings attained the third stage of sanctification.’”

* The name of Beuares at that time.

Here again the above particulars are repeated, being quotation, from the text of the *Buddhawanso*. This quotation is also in verse, but is less detailed, though substantially the same as the preceding. The commentary then proceeds, as in the instance of the Buddho KAKUSANDHO, first to give in prose the remaining particulars connected with the Buddhohood of KÓNÁGAMANO, and then to quote the passages from the text of the *Buddhawanso* as propounded by SÁKYA. I avail myself in this instance of a short quotation from the text of the *Buddhawanso* as the revelation it contains is both concise and comprehensive.

“ I was at that period the monarch PABBATO, powerful by my allies and ministers, as well as by my numerous armies. Having waited upon Buddho, (KÓNÁGAMANO) and attended to his supreme *dhmmo*, and after obtaining the permission of that vanquisher and his priesthood, having presented them every offering wished for, for refreshment, I presented also the shawls with rough surfaces, China silks, shawls made of the silk of silk-worms, blankets, and slippers embroidered with gold, to the divine sage and his disciples. The said MUNI seated in the midst of his priesthood thus predicted of me. ‘ Within this *Bhaddakappo* this individual will become *Buddho*. ’ ”

Here the commentator, BUDDHAGHÓSO, notes that he has omitted some portions of the revelations which were probably not strictly applicable to the subject under illustration, and resumes SÁKYA’S discourse as follows :

“ On hearing this prediction of his (KÓNÁGAMANO’S) I (SÁKYA) exceedingly rejoiced, instantly resolved to fulfil, thereafter, the ten probationary courses. Seeking, therefore, the gift of omniscience, presenting alms to the chief of men (KÓNÁGAMANO) I entered into priesthood in the fraternity of that vanquisher, abdicating my empire.”

After again omitting an interesting portion of the revelation, not connected with the subject under consideration, the commentary proceeds as follows with the quotation from the text of the *Buddhawanso*.

“ *Sobhito* was his city—and SÓBHÓ the name of the ruling monarch : that Buddho’s father’s family dwelt in that city. The father of that Buddho, the divine sage KÓNÁGAMANO was the brahman YONNADATTO, and his mother UTTARA’. His chief disciples were BIHÓSO and UTTARO; and his assistant disciple SOTTHIJO; his chief priestesses SAMUDDA and UTTARA’, and the sacred tree of that Bhagawá was the *udumbaro*. In his stature, the Buddho was thirty cubits, and he was invested with a golden glory like the flames issuing from a blacksmith’s forge. The term of existence of the Buddho was thirty thousand years. During that period, he rescued great multitudes (from the misery of transmigratioo). Having established *dhmmo*, as (firmly as) a *chetiyo* which is decorated with the embellishments of *dhmmo*, and with garlands of the flowers of *dhmmo*—he, together with his disciples, attained *nibbánan*. His miraculous essence, as well as his disciples, and his promulgated *dhmmo*, all vanished in as much as all that is transitory is perishable.”

The genealogy of the twenty-fourth Buddho KASSAPO.

“ Subsequent to KÓNÁGAMANO, the Buddho KASSAPO, the chief of hipeds the rája of *dhmmo* and the author of light—having bestowed largely in alms, and having conferred charity extensively and consoled the destitute, relinquishing (the

worldly riches which were) the rewards of his piety, and (escaping from his domesticities) like unto a bull rushing from the restraints of his pen, achieved supreme Buddhohood ; and this chief of the universe, KASSAPO, proclaiming his faith, vouchsafed to twenty thousand *kótiyo* of living creatures, the first stage of sanctification."

After a few explanatory remarks on the foregoing passage, the commentator again quotes from the text, setting forth the pilgrimages and discourses of KASSAPO, by means of which he acquired, as his predecessors had done, the three states of sanctification for the living creatures then in existence. The commentary then gives the following extract from the *Buddhawanso*.

"I (SA'KYA) at that period, was one JOTIPA'LO, excelling in the *mantra*, and perfect master of the three *wédá*, which I used to rehearse by note. I had achieved the knowledge of signs of the *itiháso* and of divination. I could reveal what was in the earth below, and the heavens above, and was in the exercise of these powers, free from all corporeal ailments. KASSAPO Bhagawá had then a certain assistant disciple named GHATIKA'RO who was treated with great honor, possessed a well regulated mind, and had subdued the dominion of sin, by the virtue of the third state of sanctification. The said GHATIKA'RO conducted me to the vanquisher KASSAPO, and having listened to his *dhmmo*, I entered into the order of priesthood in his fraternity. Pursuing (my sacred calling) with zealous devotion, and performing all my religious obligations without the slightest omission, I fulfilled the ordinances of the vanquisher ; and having thoroughly acquired a knowledge of the whole scope of the Buddhistical doctrines composing the nine *angáni*, as propounded by the vanquisher, I glorified that dispensation of the vanquisher. That Buddho also having witnessed my miraculous attainments thus predicted. This individual will become a Buddho in this *Buddhakappo*. On hearing this prediction, astonished and delighted, I at once formed the resolution to fulfil thenceforth the four probationary courses ; and consequently I led the life of a pilgrim, renouncing all domestic affections, and in exclusive devotion to the attainment of my Buddhohood, I consigned myself to that arduous task."

The commentary then affords the following particulars regarding the personal history of KASSAPO.

"The native city of that Buddho was called *Báránasi*, and the reigning monarch was KIKI', and KASSAPO's family was resident there. His father was the brahman BRAHMADATTO, and his mother DHANAWATI: his chief disciples were TISSO and BHARA'DDWAJO ; his assistant disciple SUBHAMITTO ; his chief female disciples were AMILA' and URUWE'LA', and the sacred tree of that Bhagawá was the *ni-grótho*. In his stature he was twenty cubits, dazzling like the lightning in the skies, and refulgent as the full moon ; and the term of his existence was twenty thousand years. He who had existed the whole of that period, redeeming multitudes of living creatures (from the misery of eternal transmigration), rendering *dhmmo* refreshing as a pool, and *síla* like unto fragrant ointment, investing (living creatures) with *dhmmo* as it were their vestments ; sprinkling *dhmmo* as it were the flowers of a garland, and placing *dhmmo* before those individuals, who were about to attain the beatitude of *níbbánan* as it were a mirror, he vouchsafed to say, behold the perfection (of my dispensation). And converting *síla* into a cloak and *jhánan* into a breastplate, he covered (mankind) with the armour of *dhmmo*, and provided them with the most perfect panoply. Bestowing on them *sate* as a shield, and *tikhinnánan* as a sceptre, he conferred *dhmmo* on them as the sword that vanquishes all that is incompatible with *síla*, investing them with *téwíjja* as an ornament, and

the four *phalé* as a tiara. He also bestowed on them the six *abhinán* as a decoration such as flowers to be worn; assigning the supreme *dhammo* to them as the white canopy of dominion which subdues the *sias* (of heresy); and procuring for them the consolation (of redemption from transmigration) which resembles a full-blown flower, he and his disciples attained *nibbánan*. As well this incomparable Buddha who had overcome the dominion of sin, as his perfectly propounded dispensation, worthy of the invitation 'come hither and examine it,' and his priesthood, illustrious and strictly observant of sacerdotal discipline, the whole perished. If it be asked, why? 'Because all transitory things are doomed to perish.'

"The Bhagawá KASSAPO expired in the *Kási* country in the *Sétawýáno* garden in *Sétawýánagaran*. His corporeal relics did not separate (his bones remaining jointed after the cremation). The whole of the population of *Jambudípo* assembled and constructed a *thúpo* one *Yójanan* in height, each brick for its outer work was of gold, worth a *kóti* and set with jewels; and they filled in the inner part with bricks each worth half a *kóti*; its cement was composed of red lead, using the oil of the *téla* seed, in the place of water.

"The said Bhagawá KASSAPO, fulfilling the object of his mission for the welfare of mankind, was a sojourner (chiefly) in the city *Migadáyó* (a part of *Báránsi*) in the kingdom of *Kási* rejoicing the universe.

"The rest of the *Gátháyo* are well known in all their bearings. The account of the genealogy of the Buddha KASSAPO is thus closed in the *Atthukaṭṭha* called the *Madhuraatthawilásani*, to the *Buddhawanso*. In this extent of detail; the history of the genealogy of the twenty-four Buddha is comprehensively concluded. Now in due course the history of the genealogy of our Buddha presents itself (for relation). This is his history.

"Our BODHISATTO (Buddho elect) existed through four *Asankheryáni* and one hundred thousand *kappé*. His advent has been recognized and predicted by the (last) twenty-four Buddha, commencing with DI'PANKARO of whose fraternity he was a member. It has been thus announced by the revelation of those twenty-four Buddha 'there will be no other supreme Buddha subsequent to KASSAPO, than this individual.'

"These are the particulars (of his history). It has been thus explained by Buddha himself: 'the (*abhinchára*) final sanction (for attaining Buddhohood) is only obtained while in the collective possession of these eight attributes, viz. being of the human nature; possessing perfect manhood and a propitious destiny; being gifted with the privilege to approach a Buddha; being admitted into sacerdotal ordination; being endowed with pious impulses; being full of holy aspirations and zealously devoted to his destiny.' By him who had by the accumulated possession of these eight attributes, obtained the final sanction of DI'PANKARO to attain Buddhohood—it has also been said 'while I was acquiring by all manner of means the qualifications for Buddhohood, having succeeded in my search, I came in sight of the first *dánapárami* sanctification.'

"He who had been thus blessed with a sight of the first of the (ten) *dánapáramitá* which lead to Buddhohood, continuing to fulfil his prescribed duties, reached at length his *awatar* in the person WESSANTARA (his last existence before attaining Buddhohood). Whatever those duties might be, they have been described in speaking of the rewards of piety earned by the (other) Buddha elect, who had ensured their election.

"(Buddho has also said) 'Thus individuals of perfect manhood who have been selected to become Buddha perform their pilgrimage through a hundred *kótiyo* of *kappé*, a long period: they are not subject to be boru in the *Avichi* hell, nor in the *lokantéra* hells, nor do they become inhabitants of the *Nigghátanahá* hell, suffering from thirst and hunger—nor, tenants of the *Kúlakanjanhá* hell. Though they may be

reproduced in *Duggatī* (a minor hell) in which men are reproduced in the form of animals, they are not born there a diminutive creature (smaller than a snipe); nor when produced among the human race, are they ever born blind, nor do they lose their hearing or become dumb. These selected Buddha moreover are neither produced in the form of women, of ordinary hermaphrodites, or of hermaphrodites who periodically alternate their sex. Exempt from all misfortunes they are pure in their mode of subsistence—avoid heretics and are observant of pious conduct: though they may be born among the *Suaggá*, they are never reproduced in the *Brahmalóko asanasatto* (as the term of existence there would be too long); and they do not possess the qualification (of the arahat sanctification) which would involve their reproduction in the *Suddhāvāsa brahmalóko* (from whence they would never return to the human world). These righteous individuals, forsaking all worldly advantages, and released from the bonds of eternity, perform their pilgrimage for the welfare of the world, fulfilling their probationary courses.'

'He who was thus proceeding in the prescribed course of his destiny, having attained these (eighteen) attributes, and having thus reached his penultimate *avatár* in the person of WESSANTARO (the rája of *Jetutaranagaran* one of the twenty-five great cities of *Jambudīpo*) thus spoke. 'This earth devoid of the power of discrimination and unconscious of its blessings and its curses, has been made to quake seven times by the merit of my charities.'

'Having thus performed those great acts of charity which caused the earth to quake at the close of his prescribed term of existence, from hence he was translated, by death, into the realms of *Tusitapura*. While the Buddha elect was sojourning in *Tusitapura* the *haláhalan* (tumult) that precedes the advent of every Buddha came to pass.

'In each creation there are three such tumults—they are these: the *Kappa-haláhalan*, the *Buddha-haláhalan* and the *Chakkawatti-haláhalan*. It is a proclamation, that at the termination of one hundred thousand years, the *kappo* perishes. The déwá called *Kámawachará*, with loosened topknot, and dishevelled hair, and with bewailing countenances—wiping their tears with their hands—clad in red vestments, and assuming the most revolting forms, wandering through the human world, thus promulgate their warnings: 'Blessed! at the termination of one hundred thousand years from this date, the *kappo* is to perish: this world will then be destroyed: the great ocean will be completely dried up. This great earth and *sirénu* (suméru), the monarch of mountains, will be consumed by fire and utterly destroyed; and the world will be annihilated as far as the *brahmalóko*: blessed! embue thyself with benevolence: blessed! impress thyself with compassion, universal love and strict justice; comfort thy father and mother, and reverence the elders of your tribes.' This is called the *kappa-haláhalan*.

'Again it is proclaimed that at the termination of one thousand years an omniscient Buddha will be born in the world. The *Déwatá* who protect the world, wander through it, proclaiming, 'blessed! Buddha will be manifested in the world a thousand years from this period.' This is called the *Buddha-haláhalan*.

'Lastly it is proclaimed that, at the termination of a hundred years, a *Chakkawattī* rája will be born. The *Déwatá*, who are the tutelars of the world, wander through it proclaiming 'blessed! at the termination of a hundred years a *Chakkawattī* rája will be born.' This is called the *Chakkawattī-haláhalan*.

'Among these, when the proclamation of the *Buddha-haláhalan* is heard, all the *Déwatá* of the ten thousand *Chakkavalane* assemble at one place, and having ascertained who the human being is who will become Buddha—repairing to him they invoke him. These invokers, however, only address their petition to him on his manifesting the *pubbanimitté* (indications of approaching death in the *Déwalóko*).

“ At the conjuncture (in question), the aforesaid assemblage, consisting of the four great kings (of the *dewos*) SAKKO (INDRA) SUGA'MO, SANTUSITO and WASAWATTI, together with the great *bráhmās* in each *Chakkawálan*, assembled together in one *Chakkawálan* (of the ten thousand); and repairing to the Buddhó elect on whom the *pubbanimitté* had been manifested; thus addressed him. ‘Blessed! by thee, the ten probationary courses have been fulfilled, not for the purpose of realizing the beatitude of a *sakko*, a *bráhma* or other deity: the state of omniscience has been sought for by thee, for the purpose of redeeming the world, by attaining Buddhóhood.’ They then thus invoked him: ‘*Maháwiro!* thy time is arrived; be conceived in the womb of thy mother. Rescuing *déwá* and mankind (from the miseries of sin) vouchsafe (to them) the condition of immortality.’

“ Thereupon the great elect, who was thus entreated by the *déwá*, without giving any indication of his having acceded to the prayer of the *déwá*—reflected successively on these five principal points; viz. as to the time (of his advent); the quarter of the world; the country and the tribe in which he should appear; and who his mother, and what the term of his existence should be.

“ On examining, in the first place, whether it is or is not the proper time (for the advent of a Buddhó) if it be found, that the term of human existence is then a hundred thousand years and upwards, it is not a proper period; because under so protracted an existence, the human race have no adequate perceptions of birth, decay or death. The tenets of the dispensation of (all) the Buddhá are inseparable from the recognition of those three points, characteristic of the Buddhist faith. To those (Buddha) who may expiate on those points, viz. perishability, misery (of transmigration) and *anattá*—those (who are gifted with this longevity) would reply; ‘what is it they are talking about: it should neither be listened to nor believed.’ The state of sanctification (*abhisamayo*) is, under those circumstances, unattainable. While that condition (of longevity) prevails, religion itself is divested of its sanctifying influence. Consequently that age is not a proper one (for an advent). Nor is the age in which the term of human existence is less than one hundred years a proper one; because from vices being then predominant among mankind, the admonition that is imparted to them is not allowed time to produce a lasting affect—vanishing like the streak drawn on the surface of the water. That also is not a proper age (for the advent). The proper age is that in which the term of human existence is less than one hundred thousand and more than one hundred. At the particular period now in question, the term of human existence was one hundred years; and therefore it appeared to be the proper age in which the advent of the elect should take place.

“ Then he reflected as to the quarter of the world, contemplating the four quarters together with their satellites groups; and as in three of them the Buddhá do not manifest themselves, he saw that *Jambudípo* was the quarter in which he should be born. And on reflecting as to the country in that great *Jambudípo*, which is in extent ten thousand *yójana*, in which Buddhá are born, he saw that the *Majjhima-désa* was the proper one, and he also distinctly foresaw, that there, in *Majjhima-désa* *Kapilawattha* was the city which was destined to be the place of his birth.

“ Thereupon, on pondering on the tribe, he found that the Buddhá are not born in the *Wessá* or *Suddá* caste, but either in the *Khattiya* or *Brahmá* caste, whichever might at the time be predominant in the world; and he said, ‘now the *Khattiya* is the superior. I shall be born therein, and the *rajá* SUDDHODANO will be my father.’ And then on considering as to who his mother should be, he said ‘She who is destined to be the mother of a Buddhó is chaste and sober, and has fulfilled her probationary career through a hundred thousand *kappé*, and preserved uninterruptedly, from her birth, the observance of the five *sítáni*; such appears to be the

princess MA'YA': she is destined to be my mother.' And on inquiring how long she had yet to live, he found that was only ten months and seven days.

" Having thus meditated on the five principal points, he signified his acquiescence in the prayer of the *déwatá* in those words. ' Blessed! the time has arrived for my assuming Buddhohood ;' adding ' do ye depart,' he sent away those *déwatá* ; and attended by the *déwatá* of *Tusitapura*, he entered the *Nandana* grove in *Tusitapura*.

" In all the *Déwalóka*, there is, most certainly, a *Nandana* grove (in each) wherein *déwatá* hover about, thus invoking (such of the *déwatá* as are about to die) : ' by meditating on the reward of thy former acts of piety, when translated from hence by death, may ye attain a happy destiny.' He (the *Buddho elect*) in like manner surrounded by the *déwatá* who were calling his former acts of piety to his recollection, while wandering there, expired ; and was conceived in the womb of the great MA'YA', under the asterism of *Utrásalhá*. At the instant of this great personage being conceived in the womb of his mother, the whole of the ten thousand *Chakkawaláni* simultaneously quaked, and thirty-two miraculous indications were manifested. For the protection as well of the *Buddho elect*, who had been thus conceived, as of his mother, four *déwatás* with sword in hand, mounted guard.

" Unto the mother of the *elect carnal* passion was extinguished : she became exalted by the gift vouchsafed to her. Enjoying the most perfect health, and free from fainting fits, (usual in pregnancy) she was endowed with the power of seeing the *elect* in her womb, as it were a thread which is past through a transparent gem.

" A womb in which a *Buddho elect* has reposed is as the sanctuary (in which the relic is enshrined) in a *chetiyo*. No human being can again occupy it, or use it. On that account the mother of a *Buddho elect*, dying on the seventh day after the birth of the *elect*, is regenerated in *Tusitapura*. Other women give birth to their offspring, some before the completion of ten months, and some after their completion, seated or lying down. With the mother of a *Buddho elect*, it is not so. She is delivered, after having cherished the *elect* in her womb for precisely ten months. Such is the peculiarity of the mother of a *Buddho elect*.

" The great princess MA'YA' having cherished the *elect* ten months in her womb, in her pregnant state, longing to repair to the city of her own family, thus applied to the *rája SUDDHODANO'* (her husband) ' Lord ! I long to repair to the city of *Déwadahó*.' The *rája* signifying his consent by saying ' *sádhu*,' and ordering the road to be smoothened from *Kapilapura* to *Déwadahannagarán*, and to be decorated with arches of plantain trees and areca flowers, and with foot cloths, &c. ; and placing the queen in a newly gilt palanquin, with great splendour and prestige, dispatched her.

" Between those two cities there is a hall of recreation situated in the *Súbini* wilderness, resorted to by the inhabitants of both cities. At this time, the whole of the forest trees, from the stem to the top of the branches, were covered with blossom. On beholding this blooming forest, resembling the *Nandana* grove of the *déwatá*, ringing with the melody of the sweet-toned *Kókila*, which enchant the senses, from amidst the branches and clustering fruit of the forest, like unto the chants of the celestial songstresses, the queen became desirous of besporting in that wilderness. The officers of state having reported (this wish) to the *rája*, (by his command) escorting the queen, they entered the wilderness. She, repairing to the foot of the *sal* tree, at which sports are usually held, was seized with the desire to lay hold of a branch of that tree, which was straight, smooth, round, and garnished with blossom, fruit and young sprouts. That branch, as if powerless, yet gifted with compassion, bending down of its own accord, placed itself near the palm of her hand. She then laid hold of that branch with her beauteous hand, which was re-

splendent with her red well rounded nails, on fingers rosy and round like flower pods, her arms at the same time glittering with newly burnished arm-rings. Thus holding that branch, and pausing awhile, she shone forth, casting a halo round her like that emitted by white fleecy clouds passing over the disk of the moon. She resembled the glimmering lightning, she looked the queen of the celestial *Nandana*. Immediately her travails came on; and the multitude having drawn a curtain round her, retired. While still holding the branch, parturition took place.

“At that instant the four great *Brahmánó* presented themselves bringing with them a golden net work. Receiving the elect in that net, and presenting him to the mother, they said to her, ‘princess! rejoice, unto thee a son is born.’

“Other mortals on their issuing from their mothers’ womb, come forth involved in defilement. Not so, a Buddha elect. A Buddha elect, with extended arms and legs, and erect in posture, comes forth from his mother’s womb, undefiled by the impurities of the womb, clean and unsoiled, refulgent as a gem deposited in a *Kasmir* shawl. Though such be (the purity of his birth) equally for the accommodation of the Buddha elect, and of his mother, two streams descending from the skies on the body of each, refreshed them exquisitely.

“Thereupon the four great kings (of the *Dévalóla*) receiving him out of the golden net from the hands of the attendant brahmáno, placed him in an *ajinappaweni* (antelope’s hide) fitted for state purposes, and delightful to the feel; from their hands, men received him in a *dukúla-chumba-takán*. Extricating himself from the hands of the men, and placing himself on the earth, he looked towards the east. The many thousand *Chakkavaldni* appeared to him as but a court-yard. Then the *déwá* and men of those realms, making offering of garlands of fragrant flowers, &c. made this exclamation: ‘O! great man: the equal to thee exists not here; where will a superior be found.’ Having in the same manner looked at the ten points of the compass, without finding his equal; facing the north, he advanced seven paces. He, who thus advanced, trod on the earth—not on air; was unclad—not clad; was an infant—not a person of sixteen years of age (an adult); and yet to the multitude he appeared to advance on air—superbly clad and to be full sixteen years of age.

“Thereupon stopping at the seventh step, and proclaiming this important announcement, he shouted forth with the voice of a lion: ‘I am the most exalted in the world: I am the most excellent in the world: I am the supreme in the world: this is my last existence: henceforth there is no regeneration for me.’”

After mentioning certain circumstances connected with the former birth of BUDDHO, and specifying that on the same day with himself, there also came into existence—the princess *YASÓDARÁ* (his wife); *CHHANNO* and *KÁLUDÁYI*, his ministers; his charger *Kanṭhako*; his sacred tree, the *bóddhi*; and the four mines of wealth;—the *Attakathá* proceeds:

“The inhabitants of both cities (*Déwadaho* and *Kapilawatthu*) taking charge of this great personage conveyed him to *Kapilawatthu*.

“At that period, a certain *tápaso*, named *KALADE’WALO*, who was a confidant of the máha rája *SUDDHODANO*, and who had acquired the eight *samápatti*, having taken his meal,—for the purpose of enjoying his noon-day rest,—repaired to the *Tawatinsá* realms. He there found the host of *déwata*, in the *Tawatinsá* realms, revelling in joy, and in the exuberance of their felicity, waving cloths over their heads and asked, ‘Why is it that ye thus rejoice, in the fulness of heart’s delight? Tell me the cause thereof?’ The *déwatá* thus replied, ‘Blessed! unto the rája a son is born, who seated at the foot of the bo tree, having become Buddha, will establish the

the prince is in every respect endowed with personal beauty, he is untaught in a single martial accomplishment, and is incapable of controlling women : we cannot therefore give our daughters.' The rája on having heard the reproach, repairing to the son, communicated the same to him. The Buddho elect replied, ' What accomplishment is it requisite for me to exhibit?' ' It is requisite, beloved, that you string the bow, requiring a thousand persons to bind.' ' Well then have it brought.' The rája causing it to be brought, presented it to him. It was a bow which required a thousand persons to string and unstring it. This great personage, receiving that bow, while yet seated on his canopy, twisted the bow-string round his great toe, and drawing it with his toe, strung the bow ; and taking the bow in his left hand and drawing the string with his right, let it (the cord) fly. The whole town started, and to the inquiry, ' what noise is this?' the answer was ' the clouds are rolling with thunder ;' some others observed, ' ye know nothing about it, it is not the rolling of thunder : it is the ringing of the bow which requires the strength of a thousand persons which the great archer, the prince endowed with halo around his person, has rung.' The *Sákya* princes on hearing of this, from that circumstance alone, commencing to rejoice, were highly gratified.

' The great mortal then inquired, ' what more should be done.' They replied, ' It is requisite that an iron target eight inches thick, should be pierced with an arrow. Having pierced it, he said, ' what else.' ' It is requisite, that a plant of the *asaná* tree, four inches thick, should be pierced.' ' Having transfixed that what else should be done?' ' Then carts filled with sand and with straw.' The great elect then transpiercing the straw cart drove the arrow one *usabhan* deep into the water, and eight *usabáni* into the earth. They then said, it will be requisite to pierce a horse hair, guided by the mark afforded by the suspended fruit of the *wañgingáno* (which is attached to the hair). Replying ' hang it up at the distance of one *yójanan*' he shot his arrow in a direction which was as dark, under the obscurity of dense clouds, as if it were night ; and pierced the horse hair, which at the distance of one *yójanan* was indicated only by the *wañgingáno* which was suspended from it, and it entered the earth. If fully related, these were not all that the great mortal exhibited on that day to the world, in proof of his accomplishments in martial deeds. Thereupon the *Sákya* tribes sent their daughters superhly decorated. There were forty thousand dancing and singing girls. The princess (who was afterwards) the mother of RA'HULO, became the head queen.

' The great mortal, like unto a celestial prince, surrounded by his heavenly host of damsels, and attended by his female band of musicians, dwelt in his three palaces adapted to the three seasons, enjoying his great prosperity. Thereafter, on a certain day, wishing to inspect his grounds in his pleasure garden, he ordered his charioteer to prepare his state conveyance. He replying ' *sádhu*,' and fully decorating the carriage, and harnessing to it four white horses, swift as the wind and the swallow, and of the *sindhu* breed, reported it to the Buddho elect ; who entering the chariot, which was like unto a heavenly mansion, proceeded in the direction of the pleasure garden.

' The *déwatá*, saying to themselves, ' the time is at hand for prince SIDDHATTO to attain omniscience, let us present to him the predictive signs,' exhibited to him a certain *déwatá* transformed into the character of a decrepid object, wasted in appearance, with decayed teeth, grey hairs, and hent posture, tremulously leaning on his staff. Him the Buddho elect and charioteer alone saw. The Buddho elect then thus inquired : ' Charioteer! who is this person? His hair also is not like that of others,' and having also made the other inquiries, as recorded in due order in the *Mahápadána suttan*, and listened to his answers, he observed (to the charioteer), ' My friend, let this be received as a type of the degradatiou of this existence, as it

is a proof that wheresoever an individual may be born, he is subject to decay.' Deeply afflicted in mind, giving up his excursion, he re-ascended his palace. The rāja inquired: 'why has my son returned?' 'Lord! because he saw a person in a decrepid state.' The indulgent monarch then ordered guards to be stationed at the distance of half a *yōjanan*.

"Again on a subsequent day, the Buddho elect having visited the pleasure garden and having beheld a diseased person, represented by the *déwatá* aforesaid; and having made inquiries in the manner already explained, afflicted in mind, he then also gave up his excursion, and reascended the palace. The rāja, on hearing this, sent a band of musicians (to amuse him) saying 'they will divert his mind from his desire, to enter into priesthood;' and giving up the former guard he established others all round, at the distance of three *gáwutáni*. In the same manner having beheld a corpse, on a subsequent occasion, the rāja established guards at the distance of four *gáwutáni*.

"And again on a certain day, the Buddho elect, while on an excursion to the pleasure garden, noticed a well clad, and completely enveloped form, exhibited by the same *déwatá*, and said, 'My friend, charioteer, what is the name of this person?' The charioteer, from that period not being a *bodhdhotpádo* (an age in which the Buddhistical creed prevails), was incapable of explaining either the nature of the sacerdotal state, or the merits appertaining to that sacerdotal state, excepting by the miraculous agency of the *déwatá*; replying therefore by their inspiration, he said, 'that the person is a priest,' and explained the merits of the priestly state.

"The Buddho elect, impelled by his desire to become a priest, repaired on that day to the pleasure garden. Those Buddhá elect, who are manifested in ages when the term of human existence is protracted, beheld these predictive signs at intervals of one hundred years each, but our Buddho elect, having been manifested in a short-lived age, visited the pleasure garden at intervals of four months. The *Dighabhánaka* fraternity, however, assert that he witnessed all the four predictive signs on the same day.

"There, having enjoyed the sports of the pleasure garden, during the day, and having bathed in the reservoir appropriate to occasions of festivity, at the setting of the sun, he seated himself on the rock of festivity, in order that he might redecorate himself (after his bath). The *déwá* WISSAKAMMO, ordered by SAKKO, the king of *déwá*, who knew his inmost wishes, repairing thither in the character of a barber decorated him with the vestments of the *déwá*.

"While some from among his female bands were playing airs on musical instruments, and the beauties of the *Sákya* tribes were yet hymning forth the canticles of triumph and gratulations, peculiar to the brahminical observances then prevalent, unto the Buddho elect, who was thus adorned with all his insignia of celestial majesty, mounting his chariot, he departed. At that instant, (*YAS O'DARA'*) the mother of RA'HULO had given hirth to a son; and the mahá rāja SUDDHÓDANO, on hearing this news, desirous of gladdening his son, sent him a message (to announce the event). The Buddho elect, on receiving this announcement exclaimed, 'RAHULO being born creates (another) tie (in domestic affections).' The rāja inquired (of his messenger,) 'what did my son say;' and learning what his exclamation was; said, 'let my grandson be henceforth called prince RA'HULO.'

"The Buddho elect mounting his superb chariot, re-entered the town, attended by his retinue in great pomp and magnificence. At that moment, a virgin of royal extraction named KISA'GÓTAMI, who was in the bloom of personal beauty, and endowed with graceful fascinations, was standing in the upper story of his superb palace, and beheld the personal magnificence of the Buddho elect, who was in the act of entering the mansion: and under the impulse of the fervour of her admiration, she chanted forth this hymn of adulation.

‘ Nibbutānū sá mātá, nibbutānū só pitá
Nibbutānū sá nári yassāyan ídisogati.’

“ ‘ Whosoever’s destiny has been such as his, most assuredly his mother must be blessed ; most assuredly his father must be blessed, and most assuredly his consort also must be blessed.’

“ The Buddho elect listened to this hymn, and thus thought : ‘ the gratulation she has uttered is worthy of being heard by me. It is requisite that I, who am performing my pilgrimage in search of *nibbānan*, should this very day, abandoning my lay connections, and departing (hence) and entering into the priesthood, prosecute my pursuit of *nibbānan* ; and adding ‘ let this be a gift to serve as a preceptor (of piety) to her ; he detached from his neck a pearl necklace worth a lakh, and sent it to KISAGÓTAMI. She, in excess of her exultation, exclaimed, ‘ prince SIDDHATTO, captivated by me, sends me a present.’

“ The Buddho elect, with the utmost pomp, ascended the superb and enchanting palace, and laid himself down on his state bed. Thereupon women in the bloom of youth, resembling the celestial beauties of the *Tāvatisa* heavens, with visages resplendent as the silvery full moon, with lips in color like the *bimbothala** fruit, with beauteous teeth, white, pure, even, smooth and without interstice, with jet black eyes, and jet clustering locks, graceful in their movements like the voluptuous swan, with arched dark eyebrows, and breasts fully developed, globular, equal in size and exquisitely placed, covered only with the *mékhalá* (the medallion of the zone) which was set with gems in newly burnished gold and silver, with **** plump, and circular as a wheel, and with thighs round and smooth as an elephant trunk, excelling in dance and song, taking with them musical instruments of melodious tones, and crowding around the great mortal, with the intent of diverting him from his purpose, by their voluptuous fascination, began to sing and to dance. The Buddho elect, however, being entirely exempt from the influence of carnal passions, took no delight in the dance and song ; and in a short interval fell asleep. They seeing this (indifference), and saying if the individual for whom we have commenced our song and dance is gone to sleep, why should we fatigue ourselves ?’ and dropping each the instrument she had taken, on the spot on which she was standing, they all laid themselves down. The lamps of scented oil continued burning.

“ The Buddho elect, on awaking, still seated cross-legged on the bed on which he had been sleeping, surveyed these sleeping females, who had laid aside their musical instruments, some with their cheeks wet with the saliva that had flowed from them ; some gnashing their teeth ; some muttering ; some with round mouths (gaping), some denuded by their covering being displaced ; some in ungraceful postures, and some with dishevelled hair representing so many objects fit for a sepulchre.

“ The great mortal, on beholding this spectacle, became the more strongly confirmed in his abhorrence of sinful courses. Unto him, the splendid and charming palace, which was like unto the mansion of the thousand-eyed deity (INDRA), became (as it were) a disgusting object, filled with loathsome corpses, like unto an *Amakasusānan*† (a catacomb) ; and the three realms (of the universe) appeared to him as if they were a single habitation involved in flames. Then resolving ‘ most assuredly the crisis is at hand ; my mind is fully made up to enter into priesthood ; it is proper that this very day my final separation should take place ; and rising from his bed and approaching the door of his chamber he called out ‘ who is here ?’ CHHANNO (who was born on the same day with BUDDHO) was sleeping at the door, making the threshold his pillow, and replied ‘ prince, it is I, CHHANNO.’ ‘ This very day am I resolved to effect my great final deliverance. Without utter-

* A creeper, *Tryonea grandis*.

† Literally “ raw cemetery ” in which bodies were left unburnt or uninterred.

ing a word, bring me a swift *sindhawa* steed.' He, replying ' *sadhu* Lord!' and taking the trappings of the horse, repaired to the stable; and seeing there the superb charger *Kanthako*, who was capable of overcoming all his foes, standing in his delightful stall, under a canopy decorated with jessamine flowers, and lighted up with lamps of fragrant oil, he said ' it is proper that he should be caparisoned as a state charger, to be used to-day for the final deliverance of the prince;' and he caparisoned *Kanthako*. The said charger in the act of being accoutred knew (what was to happen); and exulting in his master's approaching assumption of priesthood, neighed loudly, as if he had said ' this caparisoning is unusually tight; not like the saddling of other occasions, for an excursion to the pleasure garden: most assuredly, this very day the prince takes his great final departure.' That neigh resounded through *Kapilawatthu*. The *dēwata* however suppressing the sound prevented its being heard by any one.

" The Buddho elect, saying ' let me see my son once more,' and proceeding from his own to the chamber of the mother of RA'HULO, gently opened the door. At that moment a silver lamp, lit with fragrant oil, was shedding its light on the interior of the chamber; and the mother of RA'HULO was slumbering with her hand resting on the head of her infant who was reposing under a superb canopy, on a bedding formed of one *ammanan* of the common and the Arahian jessamine. The elect, his foot still resting on the threshold, and intently gazing—thus meditated. ' If I remove the hand of the princess, to take up my child (and embrace him), she will be awakened; and thus an impediment will be produced to my departure. Let me then, after I have attained Buddhohood, return and see my son.' Descending from the upper apartment of the palace, and approaching his steed, he thus addressed him: ' Do thou, my cherished *Kanthako*, in one night translate me; and, as the consequence of that translation, achieving Buddhohood, I shall translate this world together with those of the *dēwá*.' Then springing aloft, he seated himself on *Kanthako*. The said *Kanthako*, was eighteen cubits long from his neck—his height was in proportion—well formed, swift and in good condition, and in color like a bleached shell.

" The Buddho elect, who had mounted this charger, having desired CHHANNO to hang on by the tail, in the middle of the night approached the principal gate of the town. At that time, the guards, whom the rája had stationed to prevent the escape of the Buddho elect, were still watching, heing in number one thousand to each doorway in the gate. The elect, however, had the power of one hundred thousand *koliyo* of men, or the strength of a thousand *koliyo* of elephants. There he thus resolved. ' Should the gate not be opened, this very day, mounted on *Kanthako*, together with CHHANNO clinging to his tail, holding the steed fast between my thighs, and springing over the rampart eighteen cubits in height, let me quickly escape.' CHHANNO and *Kanthako* concurred in that resolution.

" The tutelar *dēwatá*, however opened the gate.

" Instantly MA'RO (death), the agent of sin, saying, ' let me stop the great mortal, and rising aloft into the air, thus addressed him: ' *Maháwero* depart not: on the seventh day from hence, the heavenly *Chakkaratanan* will most certainly come to pass. Then thou shalt exercise sovereignty over the four great quarters (of the earth), together with their two thousand isles: hlessed! wait.' The great mortal asked, ' Who art thou?' ' I am Wassawatto.' ' I am aware that both empire and universal dominion are proffered to me: I am not however destined for royalty: depart MA'RO! approach not this. I shall become Buddho, making the ten thousand realms of the universe quake, in acknowledgment of there heing no one greater than myself.' He thus spoke; and MA'RO vanished.

" The great mortal in his twenty-ninth year, relinquishing the attractions of his

imperial greatness, with the indifference that he would cast spittle from him, departed from his mansion the seat of that regal splendour; and in quitting the city, on the full moon day of the month *Asolhi*, during the ascendancy of *Uttārasolhā* lunar mansion, he was seized with a desire to gaze on the city. At the instant of being seized with this wish, that portion of the ground on which (the city stood) spun round, like the potter's wheel. By this means the Buddha elect (without turning round) surveyed *Kopīlawotthu* from the spot on which he stood, and having noted the spot on which *Kanthoko* had stood, as the destined site of a *chētiyo*, he turned *Kanthoko's* head to the direction in which he ought to go.

"While the elect was proceeding in his journey, with great pomp and pageantry, sixty lakhs of *dēvatā* were preceding him, bearing torches. In the same manner on the right hand side of the pilgrim there were sixty lakhs of torches; and the same on the left. Other *dēvatā* doing homage with fragrant flowers and garlands with sandal-wood dust and *chambarās* and flags and pennons, attended him in procession, and kept up the symphony of heavenly song and music.

"The elect who was making his progress in pomp such as this, having in the course of the night traversed three kingdoms, and performed a march of thirty *yojana*, reached the bank of the *Anomā* river. The elect stopping on the bank of the river thus inquired of *CHHANNO*. What is the name of this river? 'Lord! its name is *Anomā*.' Replying 'nor will there be any **Anomā* (inferiority) in my ordination,' he pressed his heel to the horse, and gave him the signal to leap. The animal, springing aloft, alighted on the opposite bank of a river 'eight *usabho* in breadth.'

"The Buddha elect descending from his steed on a bank of sand, which was like unto a heap of pearls, thus addressed *CHHANNO*; 'CHHANNO, my friend, taking with thee my regal ornaments and my charger *Kanthoko*, depart. I am going to enter into priesthood.' *CHHANNO* replied, 'Lord! I will also be ordained.' 'It will not be permitted unto thee to enter the priesthood: depart.' Having, in this manner, three times refused his solicitation; and made over the jewels and *Kanthoko* to him, the elect thus meditated: 'These locks of mine are unsuited to the sacerdotal state;' and, taking up his superb sharp-edged sword in his right hand, and seizing his tresses together with the diadem on them, chopped them off. The hair was then only two inches long; and it arranged itself (on his head) curling to the right hand; and during the rest of his life, his hair remained of the same length. His beard also was proportionate, nor had he occasion to shave any more.

"The elect then taking up his locks with the tiara attached, threw them up into the air, saying 'If I am to become Buddha let them remain poised in the air; and if not let them descend.' The tiara knot, rising into the air one *yājōnō* in height remained poised there. Thereupon *SAKKO*, the king of the *dēvā*, beholding it with his supernatural eyes, and receiving it into a receptacle in height one *yājōnō*, transferred it to the *Tāvotinsa* realms, and deposited it in a *chētiyo* (thence called) the *Chūlāmani*.

"The elect then thus meditated: 'these raiments, the fabric of *Kāsi*, are costly, and unsuited to my sacerdotal condition.' Thereupon *GATIKA'RO*, the great brahman who had formerly, in the time of the Buddha *KASSAPO*, befriended him, out of the friendship that had subsisted during the whole *Buddhāntoro*, thus resolved: 'My friend, on this very day, is about to sever himself finally from lay connections: let me repair to him, taking with me the (indispensible† portions of the) prescribed

* This remark involves a pun:—a pun however is by no means a matter of levity in Buddhistical literature.

† These articles are indispensable, there are others permissible.

sacerdotal equipments,—respecting which BUDDHO himself has (subsequently) said, ‘These are the eight requisites allowable to an orthodox *bhikkhu*. Three robes, a dish, razor, sewing-needle, waist-band and hathing-cloth.’ Bringing these eight requisite sacerdotal equipments, he (by *átikáro*) presented them.

“The great mortal then assuming the character of the *Arahantá*, by putting on the garb of the pre-eminent priesthood, commanded CHHANNO to depart; saying to him: ‘CHHANNO, inform my wife and father of my happiness as a message sent by myself.’ Thereupon CHHANNO, having bowed down to the great mortal, and walked* round him, departed. The charger *Kanthako*, who had been listening to the conversation of the Buddho elect with CHHANNO, thus bewailed: ‘Henceforth my master will not be seen again;’ and when he had proceeded a certain distance, and the (Buddho) was no longer visible, unable to endure his grief, bursting her heart (*Hadayéphalíté*) *Kanthako* expired; and was reproduced in the form of a *déwó* in the *Táwatinso* heavens, where the *Surárupé* (the *Asurá*) have no dominion. His regeneration (there) may be learned in the *Wimalatthawilásiné*, the *Aṭṭhakaṭhú* on the *Wimánawatthu*.

“Unto CHHANNO, in the first instance, there was but one engrossing object of grief (the loss of his master, prince SIDDHATTO). The second cause of his grief was the death of *Kanthako*: deeply afflicted, bewailing and weeping, he departed.

“In the land in which the Buddho elect assumed his sacerdotal character, there was a mango grove called *Anupiyá*. There, having passed seven days, in the enjoyment of sacerdotal happiness, thereafter dazzling in his yellow raiment, like unto the full disk of the sun glowing under the blazing clouds of a glaring sun-set, and though alone, imposing in appearance as if attended by multitudes, and administering to beasts and birds a measure of happiness as if heaven was presented to their sight; roaming like the solitary liou, and pacing like the tusked stately elephant; and treading as if to steady the earth, this lion of the human race, in a single day, performing a journey of thirty *yójaná* and crossing the *Gangá* (*Ganges*), a river with high breaking waves and unobstructed course, entered the city called *Rájagahán*, celebrated for the pre-eminent and superb palace resplendent with the rays of the gems with which it was embellished; and having made his entry, without distinction (of houses) he begged for alms.

“By the appearance of the Buddho elect, the whole city was thrown into commotion as if *Dhanapálo* (a furious tusk elephant) had entered the town;—as if the chief of the *Asurá* had invaded the city of the *déwó*. While the great mortal was in the act of begging alms, the inhabitants of the capital confounded by the joy produced by the charm of the appearance of that great being, became incapable of resisting the desire of gazing at the great elect. Among themselves, these people kept saying one to another. ‘Friend! who is this? can it be the full moon descended among us out of dread of RA’HU, concealing the rays with which he is endowed? Such a one was never seen before.’ Smiling at his suggestion, another said, ‘This is the god of love with his floral banner: disguised in person, he has come to revel among us; having observed the great personal beauty of our monarch and of our fellow-citizens.’ Laughing at him another said, ‘Friend! art thou mad: the god of love has half of his body destroyed by the fire kindled by the jealousy of Issó’ (*ISWARA*), it is not he: it is the chief of the *déwó*, the thousand-eyed deity (*INDRA*) who has come here, imagining that it is the celestial city.’ Another again playfully ridiculing him, said, ‘Friend! what nonsense art thou talking. Where are his thousand eyes? where is his thunderbolt and where is his (*elephant*) *eráwano*? Assuredly he is BRA’HMA, who, having witnessed the indolence of the brahmans, has come hither to teach the *wéda* and their accompaniments.’ Another ridiculing the

* This proceeding is a mark of respect frequently mentioned.

whole of them, said, 'He is neither the moon, the god of love, nor the thousand-eyed deity, nor yet BRAHMA'. He is the wonderful personage, the supreme, and the teacher of the world.'

"While the inhabitants of the town were thus discussing the matter, the officers of state, repairing to the rája BMBISA'RO said: 'Lord! either a *déva*, a *gandhabbo*, or else a *rája nága*, or a *yakkho*, is wandering about our town, begging alms.' The rája on hearing this, still remaining in the upper apartment of the palace, but having obtained a sight of the great mortal, impressed with feelings of wonder previously unknown, thus instructed his officers: 'My men, retire, and compose yourselves. Should he be an inhuman being (*yakkho*), on his departing from the city, he will render himself invisible. Should he be a *dévatá*, he will depart through the air. Should he be a *nága rája* he will escape diving into the earth; and should he be a human being, he will partake of whatever alms he may obtain.'

"The great mortal, who exercised the most perfect self-possession and control over his own senses (yet attracted the gaze of the multitude by the splendour of his personal appearance), did not permit himself to look at any object more distant from him than the length of a yoke-pole. Having collected as much food as he could eat, being the mixed scraps (which had been thrown into his alms-dish by many), departed out of the gate by which he had entered the city; and seating himself facing the east, under the shadow cast by the *Pandáwo* mountain, although disgusted at the repast, repressing his disgust, he ate it*.

"Immediately the persons sent by the rája returning, reported this circumstance: On hearing this account from his messengers, the ruler of *Magadha*, the rája BMBISARO, who despised the pursuit of frivolous objects, and aimed at results as steadfast as the mountains *Méru* and *Mandáro*, impelled by the desire to see the Buddha elect, which was produced by the account given of his pious bearing—departing from the town and repairing to the *Pandáwo* mountain, and there descending from his conveyance and approaching the Buddha elect, with his permission seated himself (near him) on the ground, which (intercourse) was as refreshing as the affections of relations. Charmed with the deportment of the Buddha elect he offered to him the provision of every luxury. 'Mahá rája (replied the elect), to me there is no longer need either of the enjoyment of wealth, or the gratification of the passions: severed from the domestic and lay ties, my aspirations are directed to the attainment of supreme omniscience.' The rája, after having, in various ways, renewed his entreaties finding that he would not gain his assent, said, 'Most assuredly thou wilt become Buddha: my dominion should be visited the first by thee in thy Buddhohood,' and returned to his capital.

"Thereafter the Bódhisatto, in due course, pursuing his alms pilgrimages, became acquainted with ALARAKA'LAMO† and UDDAKKARAMO; and acquired from them the *Samápatti*. Finding that the said *Samápatti* was not the road that leads to Buddhohood, relinquishing the same, he resolved to devote himself to the *padhánan*, and repaired to *Uruvelá*. Finding that a delightful place, sojourning there he devoted himself to the *Mahápadánan*.

"Four persons, the sons of the brahmins who had been consulted (on the day that a name was selected for the Bódhisatto), as well as KONDANNO (the youngest of

* This must have occurred in the forenoon, as no substantial food can be taken by Buddhist priests after mid-day.

† This interview is described in greater detail elsewhere, during which BMBISA'RO ascertained the elect to be the son of SUDDHÓDANO, the ally and friend of his own father BHA'TIYO, the late rája of *Magadha*.

the eight brahmans consulted) these five, having entered into the sacerdotal order, in the course of their pilgrimage in search of alms, through villages, towns and kingdoms, came to that place where the Bódhisatto was. For a period of six years these persons continued his personal attendants, sweeping his cell and performing other menial offices, unto him who was devoted to the *Mahápadánan*; and they constantly indulged in this expectation. 'Now he will become Buddho! Now he will become Buddho!'

"The Bódhisatto resolving, 'Let me submit myself to the ultimate extremity of penance;' brought himself to subsist on a single grain of *tila* (*sesamum*) or of rice, and even passed his day entirely without nourishment. The *déwatá* however preserved him by infusing (by their supernatural means) juices of food (gravy) into those pores of the skin through which the hairs of the body grow. Thereafter from his continued starvation, he reduced himself to the state of a perfect skeleton; and his person which had been of a golden hue turned black, and the thirty-two attributes of manhood (peculiar to Buddhá and *Chakkawattí rája*) disappeared.

"The Bódhisatto having been brought to this last extremity by adherence to his penance, deciding again, 'This is not the proper road to Buddhohood;' and for the purpose of procuring full supplies of food, he made alms pilgrimages through towns and villages, and provided himself with provisions.

"Thereupon his thirty-two special attributes of manhood were again restored, and his person regained its golden hue; and thence his (aforesaid) confraternity, composed of the abovementioned five *bhikkhus*, saying to themselves: 'Although for a period of six years, he has consigned himself to penance, and has fasted to attain the state of omniscience, he is now making his pilgrimage through towns and villages begging alms offerings in his desire to provide himself amply with food. (By such weakness) what can be effected? He has certainly made a great effort: from it, what have we benefitted?' and then forsaking the great mortal, they repaired to the *Isipatanan* in *Báránasi*.

"At *Uruwéli* in the town *Senáni* at the house of the proprietor *KUTIMBIKO* of *Senáni*, there was a maid named *SIGA'TA'*. On the full moon day of the month *Wesakho*, having partaken of a dish of rice prepared in sweet milk by her, who presented to him with delight—taking up the golden dish (in which it was served) the Bódhisatto threw it from the bank of the *Néranjará* river, up the stream; and thereby awoke *KA'LO* the *nága rája*. The Bódhisatto having taken his noon-day rest in the delightful deep green forest of *sal* trees, which is garnished with fragrant flowers, on the bank of the *Néranjara* river, in the evening, he repaired to the foot of the *Bodhi* tree by the path that had been decorated for him by the *déwatá*.

"*Déwatá*, *nága*, *yakkhá* and *siddhá* made offerings to him of celestial fragrant flowers and odoriferous ointments. At that instant, a certain brahman grass-carrier named *SOTTHIYO*, who was carrying some (*cusha*) grass,—in his way, presented himself before the great mortal; and recognizing who he was, bestowed eight bundles of grass on him. The Bódhisatto accepting that grass, and three times walking round the *Assathá-bodhi*, the monarch of trees and pride of the forest, which was as verdant as the *Anjanagiri* mountain; and, intercepting the rays of the sun, was as refreshing as his own benevolence; and which attracted flocks of melodious birds—and was embellished with branches which quivered under the gentle breeze as if dancing with joy—stationed himself in the north-eastern side of the tree; and sprinkled that grass on the ground holding it by the ends. Instantly that grass was transformed into a throne fourteen cubits in height—the blades appearing like ornamental lines drawn by a painter, and as soon as the Bódhisatto seated himself on the grassy carpet, on the throne fourteen cubits broad, young leaves from the tree, resembling coral resting on plates of gold, fell on him.

that I devoted myself to a pilgrimage of four *asankheyyáni* and a hundred thousand *kappe*. Let this be to me the throne of exertion as well as of joy. Unto me who am seated here, all my aspirations have not yet been accomplished: let me not therefore yet rise from hence.' He continued therefore seated there for seven days realizing innumerable lakhs of *kotiyo* of *samápattiyo*.

" Thereupon certain of the *déwatá* began to entertain a doubt (regarding him); and said ' even unto this day most assuredly there is still something more to be accomplished by SIDDHA'TTO: his passion for the throne appears insuperable.'

" The *satthá* on perceiving this doubt of the *déwatá*; for the purpose of dispelling their scepticism, rising aloft into the air manifested a miracle of two opposite results. Having by this manifestation dispelled the incredulity of the *déwatá*, descending a little to the eastward of the north of the throne, he passed seven days more gazing on the throne with (*animisa*) unclosed eyes;—repeating, ' it was on this throne that omniscience was achieved: it was on this spot that the fruits of the pilgrimages performed through four *asankheyyáni* and one lakh of years have been realized.' That spot became known by the name of the *Animisa-chétiyo*. Then between the throne and the spot where he stood, having caused a *chankaman* (a walk) to be produced, he passed seven days more walking (to and fro) on that long *Ratana-chankaman* and that spot became known as the *Ratana chétiyo*. During the fourth week the *déwatá* miraculously called into existence a *Ratanagharan* (golden habitation) on a spot to the north-west of the *Bódhi* tree. There seated on a throne he passed seven days, meditating on the *Abhidhammopiṭako*; and that spot acquired the name of *Ratanagharan chétiyo*.

" In this manner having passed four weeks at the foot of the *Bodhi* tree in the fifth week (departing) from the *Bodhi* tree he repaired to the shepherd's *Nigrodho* tree (*Ficus Indica*). There also meditating on *dhammo*, he stationed himself enjoying heavenly beatitude. Having tarried there for seven days, he repaired to the *Muchalindo* tree (*stravadia*). There for the purpose of being protected from a thunderstorm, having been encircled seven times by *Muchalindo* the rája of serpents, as if he were reposing in a dormitory remote from all disturbance, he enjoyed heavenly beatitude. Having passed a week there, he repaired to the *Rajayatana* tree (*Buchanania latifolia*). There also he tarried enjoying heavenly beatitude. Seven weeks were thus passed. During that period BHAGAWA' neither washed his face, performed any corporeal function, nor partook of any food: he supported himself entirely by his miraculous attributes.

" Thereafter, after the termination of the seventh week, on the forty-ninth day, having washed his face, and cleansed his teeth with the teeth cleansers made of the *ndágalatá* creeper, and with the water brought from the *Anotatto* lake (in the *Himálayan* country) by SAKKO, the king of *déwá*—the *satthá* continued to tarry there at the foot of the *Rajayatana* tree.

" During that interval, two traders, named TAPASSO and BHALLIKO, having been impelled thereto by a *déwatá*, to whom they were related, exerted themselves to make a meal offering to the *satthá*; and taking with them some parched rice and honey, and approaching the *satthá*, said ' BHAGAWA'! out of compassion, vouchsafe to accept this repast;' and stood by him. As the refectation dish which had formerly been presented to him by the *déwá* had vanished on the day in which he first accepted the milk-rice which had been offered to him (by SIYA'TA' on the day he attained Buddhohood) BHAGAWA' thus meditated: ' The *Tathágatá* are not permitted to receive any thing with their hands; into what vessel can I receive this offering?'

" Thereupon on discovering that wish of the BHAGAWA', from the four quarters, the four kings (of the *déwá*) brought four refectation dishes made of sapphires. BHA-

GAWA' rejected them. Subsequently they brought four dishes made of a stone of the color of the *muggo* seed. BHAGAWA', out of compassion for the four *dēwá*, accepting the same, and converting them into one dish, received the repast into that precious stone-dish; and partaking thereof conferred his blessing on them. Those two traders who were brothers, accepting Buddho, *dhammo* and *saranan* (Buddho, his doctrines and his salvation) became two *upásaká*.

“ Thereafter the *satthá* repairing to the shepherd's *Nigrodho* tree tarried there. To him who had that instant taken his seat there, and who was fully impressed with the deep importance of the *dhammo* which he was destined to establish—a misgiving, common to all the Buddhá, arose—producing this exclamation ‘ alas! that this *dhammo* should devolve on me to be established, &c.’ Influenced by that reluctance he formed the resolution not to be instrumental in propounding the *dhammo* to others. Thereupon, the great *Brahmá Sahaspati*, assembling from the ten thousand *Chakkawaláni*, the *Sakká*, the *Suyámá*, *Santusitá*, *Nimmanaratino*, *Paranimmítá*, *Wasawattino* and the great *Brahmáno* said to them—‘ Beloved! most assuredly the world is about to perish’—and repairing to the *satthá* supplicated of him to propound the *dhammo*—saying, as given in the text ‘ Lord! Bhagawá, vouchsafe to propound the *dhammo*.’

“ The *satthá* acceding to his prayer thus meditated: ‘ To whom shall I first propound the *dhammo*.’ Being aware, that ALA'RAKALA'MO and UDAKA'RA'MO (before mentioned) were both dead; and, in reference to the aid afforded to him by the five *bhikkhus* formerly, saying, ‘ the five *bhikkhus* afforded to me the greatest assistance—where do they reside now?’ and finding that they dwelt at *Migadáyo** in *Báránasi*, he added—‘ repairing thither let me there proclaim the supremacy of *dhammo*.’

“ Having continued a few days longer in the neighbourhood of the *Bodhi* tree, receiving alms as a pilgrim;—on the full moon day of the month of *A'salhi* (April, May, B. C. 588) saying: ‘ Let me repair to *Báránasi*; and taking his dish and his robes, he performed a journey of eighteen *yojaná*. On the road, meeting an (*ajiwako*) individual named UPAKO, travelling on his own affairs, he imparted to him his having attained Buddhohood; and on the evening of the same day he reached the *Isipatanan*† *Báránasi*.

“ The five *bhikkhus* recognizing *Tathágato*, who was approaching, from a distance, said, (one to another,) ‘ friend! this is Go'tomo, the *sumano* (the priest): having indulged largely in good things, and recovered his stoutness of person, acuteness of his senses, as well as brilliancy of complexion, he is coming (hither);’ and they came to this resolution: ‘ We will not bow down, nor render any other mark of respect to him—we will only prepare a seat for him.’ BHAGAWA' divining their design, restraining the expansion of that universal benevolence which without distinction would have been extended over all mankind, manifested his benevolence exclusively (towards these five *bhikkhus*). They feeling themselves, under the influence of his benign spirit, became incapable, on the approach of *Tathágato* of carrying their resolve into effect; and bowing down rendered him every mark of reverence.

“ Thereupon, announcing to them his own attainment of Buddhohood, and taking his seat on the pre-eminent throne prepared for Buddho, and while the asterism of *Uttrasalhi* still predominated, surrounded by the eighteen *kotiyo* of (celestial) Brahmano, BHAGAWA assembled the five *therá* (above mentioned); and expounded to them the *Dhammachakkapavattanan*‡ (a discourse on the supremacy of *dhammo*). Of these *Kondanno* (subsequently designated *Anñkondanno Kondanno*, the instructed) acquir-

* *Migadáyo*, a place set aside for deer.

† *Isipatanan*, an edifice for the accommodation of the *Isi* (saints or devotees) situated near *Báránasi* in the midst of the above mentioned deer haunt.

‡ Discourse in the *Sanyuttanikáyo*.

ing a perfect knowledge of the same in the sense set forth in the sermon, attained together with the eighteen *kotiyo* of Brahmano the *sotapatti** sanctification.

“ In regard to this circumstance, it has been said (by Buddho himself) :—

“ I, Go'tomo, of the Sākya dynasty, who had attained omniscience, having accomplished my destiny, have achieved supreme Buddhohood, and at the prayer of *Brahmá*. I have proclaimed the supremacy of *ḍhammo*; and unto eighteen *kotiyo* (of beings) the first stage of sanctification has been vouchsafed.’

“ Upon a subsequent occasion on his propounding the *Buddhawanso* at *Kapilawatthu*, having discoursed on things passed, in describing the subsequent sanctification, BHAGAWA' has said: ‘ Subsequently, while I was preaching in an assembly of men and *dēwá*, a number of beings exceeding computation, attained the second sanctification.’

“ In this instance instead of speaking in the future tense, as the second sanctification had not yet been obtained, he spoke in the passed tense, and was enabled to substitute the past for the future (by his power of inspiration). In future instances we also must place the same construction on his discourses.

“ And again on the occasion of his propounding the *Ráhulawáda suttan*, he administered unto human beings whose number exceeded all computation, the sanctification of the beverage of heaven, which was the third sanctification.

“ In regard to which Buddho himself has said in propounding the *Buddhawanso*. ‘ In this very place I will offer admonition to my son whereby innumerable living creatures may obtain the third sanctification.’

“ BHAGAWA' (during his own ministry) had but one general convocation of his disciples; that convocation consisted of the three *Kássapo*, of whom UREWELO was the chief, and of (their fraternity of) a thousand *Jaṭilá*, of the two *Aggasawaka*‡ (chief disciples of Buddho), and of their paternity of two hundred and fifty. Thus it was a congregation of twelve hundred and fifty. Buddho himself has said (in the *Buddhawanso*, ‘ There has been but one convocation of my sanctified disciples; that congregation consisted of twelve hundred and fifty.’

“ BHAGAWA' taking his place in the midst of this assembly (held in the *Wélucano* edifice at *Rajagahan* in the first year of his Buddhohood) and at the hour rendered appropriate by the four requisite conjunctions, propounded the *Patimokkhan*. Thereafter he explained his own designs in these words. ‘ I who have become exalted and purified from sins in the midst of this congregation of *bhikkhus*, bestow upon thee, the whole of the fruits resulting from the realization of my vows, which is like unto the jewels which realizes every wish. Let me also, out of compassion to those who both seek the reward (of *nibbanan*) and eschew the vices inherent in *bhavo* (the eternity of transmigratory existence) demonstrate the *chatusachchan* (four sublime truths).’

After some verbal commentary the *Aṭṭhakaṭha* proceeds to make the following quotations from the *Buddhawanso* of SÁKYA'S own words.

“ ‘ *Kapilawatthu* is my native city. The *rája* SUDDHODANO is my father; and the mother who bore me is called MA'YA'. Until my twenty-ninth year, I led the life of a layman, having three palaces called *Ramno*, *Surammo* and *Sabho*. I had an establishment of forty thousand accomplished women. BUDDHAKACHANA (YOSODORA) was my consort, and RAHULO was my son. On witnessing the four predictive indications, I departed on horseback. During the six years, I was undergoing my

* “ *Sota*” is a rushing torrent, “ and *patti*” “ arrival at the first stage of sanctification,” the attainment of which inevitably leads to *nibbanan*.

† The others were GAYA' KA'SSAPO and NADI KA'SSAPO.

‡ SA'RIPUTTO and MOGGALA'NO.

§ Analogous to the infatuation regarding the philosopher's stone.

probation, I endured severe trials. I am GOTOLO' Buddho the saviour of living beings. By me the supremacy of *dhammo* was proclaimed at *Isipattanā* (in *Bārānasi* the capital) of the king BRAHMADATTO. KA'LITO* and UPATISSO† are my two chief disciples; and A'NANDO is my (Upatāko) confidential disciple who always lived with me. KHE'MA and UPPALALAWANNA were my two chief priestesses. CHITTO and HATTA'LAWAKO were my principal attendants among male lay ascetics. NANDAMA'TA' and UTTARA' were my principal attendants among female lay ascetics. I attained supreme Buddhohood at the foot of the *Assatha* tree. The glory (around my head) casts its effulgence sixteen cubits high, and the term of my existence is designed to be one hundred‡ years. In the course of that existence I am destined to save multitudes; and for the guidance of posterity having established *dhammo* as a beacon, I shall also, at no distant period, together with my sacerdotal fraternity in this very world, attain *nibbānan*, like fire extinguished by the exhaustion of fuel.'

"Having in this manner expounded the whole of the *Buddhawanso*, explanatory of the *Kappā*, of the names (of persons and places), of the genealogies and other particulars, perambulating on the *Ratanachankamo*, which he had created at *Kapilawathu*; and having received the reverential obeisance of his relations, descending from the air (on which the *Ratanachankamo* was poised), BHAGAWA' took his seat on the pre-eminent Buddho's throne which had been prepared for him.

"ON BHA'GA'WA', the saviour, having thus seated himself, his assembled relations relieved from their (previous) distress§, with perfect unanimity seated themselves also around him. Thereupon a *Pokkhara* shower descended, which was instantly absorbed through the fissures of the earth. Those who wished to get wet, did get wet. Those who did not wish to get wet, did not receive a drop of rain. On beholding this, surprised by the miracle and wonder, they exclaimed 'Lo! what miracle, what wonder!' On hearing this exclamation, TATHA'GATO observed, 'It is not only now, on the occasion of my relations being assembled that a *Pokkhara* shower has fallen; it has so rained in aforetime also.' Making that subject his text, he preached the *Wessantarajātako*||; and it produced its effect. BHAGA'WA then rising from his pulpit retired to his *Wihāro*.

"Be it understood, that the eighteen *gātā* commencing with the words '*apari-mēyyé ito kappé, chaturō āsinsu nāyakā,*' (at a period incalculably remote from this *kappo*, there were four Buddhā) are *gāthā* composed by those who held the convocation¶. All the information contained in the rest of the *gāthā* (of the *Buddhawanso*) needs no commentary.

"Thus is closed the *Madhura atthawilāsinīyā Buddhawansaṭṭhakathā* being a commentary on the *Gotomo Buddhawanso*, the history of the twenty-fifth Buddho."

N. B. The distance from which I communicate with you deprives me of the privilege of correcting the press. It is not my intention to trouble you with a list of *errata*, but there is one error, produced by my own carelessness in giving to my clerk an inaccurate genealogical table to extract from, which I must be permitted to rectify, as it materially affects the question under investigation, page 715, vol. 6, for "paternal grandson" read "son." In page 51, of the Introduction to the *Mahawanso*, it is explained how this error was committed.

* Subsequently called MOGGALANO. † SARIPUTTO.

‡ All Buddha are released from existence before the period of extreme old age in their respective terms of existence.

§ Being of a royal and reigning family they had remonstrated as already explained, with BUDDHO, on his leading the life of a mendicant pilgrim, instead of being respectably maintained by them.

|| A discourse in the *Jātakan*, a section of the *Suttapitako* narrative of BUDDHO's incarnation in the character of *Wessantaro rāja*.

¶ This occurred at the first convocation held after SA'KYA's death.

VI.—*Table of Mortality for ages from birth to twenty years, framed from the Registers of the Lower Orphan School, Calcutta.* By H. T. PRINSEP, Esq.

In the article published by me in the Journal of the Asiatic Society for the month of May 1837, I pointed out the facility with which the principle of computation applied therein to the casualties of the Bengal Civil Service, might be extended to any fixed and continuous body, provided only there was a register kept of the age at which each individual came to belong to it, and of the casualties with the date of the occurrence of each, or if the life was lost to the registers, through retirement, discharge, or other similar contingency, of the date of such removal from the books.

I advised the formation of books, arranged for each age of life, for registering the casualties amongst considerable numbers of each grade of the population of India, in order that tables might be framed therefrom for the valuation of native life, so as eventually to extend to this class the benefits of life assurance in all its branches.

I beg through the pages of the Journal again to point attention to this object, and as a first fruit of the wide field of statistical inquiry which lies open in this direction, requiring only a little labour to yield a rich crop of useful results, I now present to the public a table of mortality for children and young persons, from birth to twenty years of age, framed from the registers of the Lower Orphan School of Calcutta, upon the principle before explained and inculcated.

I am indebted to Dr. STEWART, late Secretary of the Statistical Committee of the Asiatic Society, for the materials from which the table has been prepared. This gentleman, being connected with the Military Orphan School, found that a series of registers had been kept, and were forthcoming from 1798, of every boy and girl who had been admitted to that institution. The books were made up annually, and the boys or girls' names being entered alphabetically at the beginning of the year, twelve columns were ruled down the page, and any casualty by death was entered with its date in the column of the proper month. In like manner at the foot of the list of boys and girls in the institution on the 1st January, the fresh entries in the course of the year were recorded, with notice of the age of each new comer, and the date of his admission appeared in the column for the month when it took place.

Upon the first view of these registers, I at once perceived that they afforded the materials for a computation of the mortality amongst the inmates of the Orphan School, upon the principle applied to the Civil

Service of Bengal, and needed only to be re-cast and added up to yield equally valuable results for the ages of life they comprehended. The re-casting of thirty-eight years' registers containing many thousand names, has however proved a work of labour that has occupied several months. The Statistical Committee has furnished a writer, who has been employed on the work for this period without intermission, and the product of his labour in the volumes which show the name of every child, the date of his admission, and the manner of his having been disposed of, are deposited in the library of the Asiatic Society, as well for the verification of the table now submitted to the public, as that the detailed registers may be available for the ascertainment of other results which also may be gathered from them*.

My present purpose, as above stated, is confined to the exhibition in a tabular form of the ratio of mortality for each year of existence as deduced from these registers.

It will be satisfactory to explain in the first instance the process followed in the construction of the table; for there are several circumstances requiring to be noted, as guides to those who may apply the same principle of computation to other classes of persons, or may undertake the recasting of other similar registers.

Firstly. The Orphan School books did not show in every instance the actual date of birth, nor, if they had done so, would it have been advisable to attempt to follow each child from birth-day to birth-day, and so frame a general register, true to the exact age of each individual. For example, a child admitted is simply entered as aged not one complete year; in the re-cast of the registers this child stands as entered of the age 0, and he is considered as remaining of that age until the 1st January next following, though his birth-day, that is the date on which he completed one year, may happen to have been in November, or in February, or in any other of the twelve months following the date of his admission. All subsequent years of life are in like manner computed by the calendar year, from 1st January to 31st December, without reference to birth-days, which, as the error will be equal both ways, and so balance itself, affords a complete result for our present purpose.

Secondly. It is the object in the construction of this table, to deduce correctly in the first instance the annual percentage mortality. The admissions in the course of a year do not give the risk of those lives for the whole year. If for instance all admitted at 0 year of age

* NOTE.—Amongst other purposes to which these registers may be applied is the ascertainment of the relative mortality in different periods of years, and in different months and seasons.

had entered on the 1st December, there would have been the risk of only one month in their case, and the number of casualties upon the number admitted would have been one-twelfth only of the annual ratio. To provide accurately for this I furnished the writer, employed in re-casting the registers, with a table giving a decimal value for every day of the year, and thence, according to the date of admission, I made him enter the risk, as of the fraction for the period of the year remaining to 31st December. Thus, in the re-cast of the registers, each admission will be seen indicated by a fraction to three places of decimals: and the number of risks is by addition of the whole brought to the true annual sum for computation of the ratio of mortality from the actual casualties.

Thirdly. When a life lapsed, its risk was lost for the remainder of the year. To provide for this, I made a reversed decimal table showing the fraction of the year to the date of the casualty, and by entering the lapsed life not as an entire year's risk, but according to the fraction to the date of occurrence, effectually removed this source of error. But those who follow this plan must be careful, when a life lapses in the very year of admission, to take both fractions from the same table for computation of the value of the risk: otherwise a child admitted on the 2nd January and dying on the 30th December, would have the same fraction to represent both dates, and would stand as 0, though the risk of his life was an entire year, less only two days. The writer employed in re-casting the Orphan School registers made this mistake in the first instance, which is the reason of my noticing the point.

Fourthly. Having thus settled the mode of entering admissions and casualties, I caused books to be prepared for each year of life. In that for age 0, I caused to be entered successively, all who were admitted at an age less than one year, taking their names in succession from the register of each year from 1798 to the present time. The number of names thus entered in this book for age 0, is 5930, but each being reduced to its fraction of the year of admission, and the death cases being doubly reduced, the number of annual risks, for this age is diminished to less than half, being 2646, which is what might have been expected. The names of the whole being thus looked out in the successive books, and entered in a fresh register for age 0, the page was ruled for forty years of life from 0, and each name was marked as a year of life in the columns following 0, as it was found in the successive registers, until the date of decease, or of removal from the institution.

Fifthly. The book of those who entered at an age less than one year being completed, and the individuals followed out, a similar book

was made up for those who entered at an age between one and two, and so for each year in succession. The pages of all were then separately summed up, and the aggregate of the books for 0 age being placed at the top of the page of a general abstract, the aggregates of the books of other ages were arranged in order so that the columns for age should correspond, and the whole be added up for the general result. This general abstract is amongst the papers deposited in the library of the Asiatic Society.

Sixthly. It will be evident that tables framed on this principle must be quite perfect, if only the registers on which they are framed be complete; but I am compelled to acknowledge that this is not the case with those with which I have had to deal. In the first place the registers of three years 1802, 1804 and 1805, are altogether wanting. The deaths of these years are therefore not all counted. I have traced in the casualty book, thirteen deaths for 1802, nine for 1804, and four for 1805, which have been duly entered, but this cannot be all. On the other hand if the children's names were found in the register of 1801, and again in 1803, and afterwards in 1806, they have been entered as giving the risk of their life for the whole consecutive period. The effect therefore is to increase the number of risks and diminish the ratio of mortality. This error has no influence on the ratio for year 0, and less of course on that for age one year, than for the advanced ages, because the risks of column 0, are all fresh admissions, which are likewise lost for these three years, and a large proportion of the risks of age one are of and the same description. The number of names lost to the tables, in the years of these missing registers, that is, which appear in the book of 1801 but not in 1803, or in 1803 but not again in 1806 is 238, of which a large proportion will probably have been deaths, and the rest removals from the institution during the period. I might have provided for the error occasioned by the want of these registers by excluding all the risks of the three missing years, but have preferred to leave them; partly because of the deaths found in the casualty register which have been entered, and partly because of another source of error, which as it operated the other way required something to counterbalance it.

In re-casting the registers, which as I have mentioned were framed originally by the year, I have not found that all the names of each register can be accurately traced. On the contrary in the 35 years' books, there are no less than 830 names lost, without notice of the cause of their being omitted in subsequent registers. This certainly is a large number. A considerable proportion of them may be ascribable to the children changing their names, and many to their being taken

away from the institution without formal order, when the removal not being settled and recorded at the time, the date and particulars have slipped from notice. Out of the 820, however, there will assuredly have been some errors from carelessness, occasioning omissions of at least fractional risks of life: on the other hand every death being a formal thing, attended with ceremonies and expenses, it is not likely that such a casualty should have escaped entry. The omissions therefore will have operated to reduce the proportion of risks to the deaths, and so to balance the effect of the want of the three years' books. I might have been less inclined to adopt the conclusion that these omissions had operated to diminish the risks, if I had not found that the rates of mortality produced by the computation, as made excluding them, were extremely high for all the ages comprehended in the table, so high in comparison with the most approved tables of Europe, as to prevent suspicion that there is error from understating the deaths. I am obliged however to confess, that in consequence of the want of the means of tracing these 830 names, my table framed from the results of the Orphan School of Calcutta, is only an approximation, instead of being based on perfect data.

Seventhly. When preparing the first general abstract of the results of these registers, it occurred to me rather as an object of curiosity than with any hope of finding matter of separate interest, to direct the boys and girls to be stated separately for every fifth year. But on obtaining the first rough abstract so drawn out, I found so great a difference in the ratio of mortality amongst the boys for the years beyond the sixth, that I determined to sift the matter through the results of each year. The consequence is, that my present general abstract is on a roll six feet long, much too large to be printed in the Journal. It must therefore lie for inspection, with the books in detail upon the table of the Asiatic Society's library. The table computed from it will be exhibited in a much more compendious form.

Eighthly. It is necessary to observe that for the purpose of showing the mortality separately amongst the boys and girls, and the number of each upon which the casualties occurred, the number living on the 31st December of the year for each age is stated in the column, and the deaths are those that occurred in the year ending on that date, that is, not in any given 12 months, but amongst the children who gave the year of life then brought to a close. To compute from these data the ratio of mortality on the boys and girls respectively, the following calculation has been adopted. For age 0, the boys that reached the 31st December, following the date of their admission, were 2713, and 243 died before that date. As all these were births or admissions,

none being brought on from the preceding year; each may be assumed therefore, on the average, to have given half a year's risk of life, when he lived to the end of the year, and half that period, or a quarter of a year, when he died before the 31st December. This assumption for the proportion is borne out and confirmed by the general number of admissions reduced to years, which, as above observed, is somewhat less than half the total of boys and girls. Strictly perhaps, instead of half, the fraction $\frac{2}{3} \frac{6}{8} \frac{5}{10}$, ought to be the ratio of reduction applied to the lives, or the reverse fraction $\frac{5}{2} \frac{9}{3} \frac{10}{6}$ to the casualties by death, to bring the calculation to the results of a complete year; but for our present purpose it is quite unnecessary to be so minutely accurate. It will be convenient therefore to adhere to the broad and simple ratio of the half and quarter. The percentage ratio per annum of the boys who were admitted at an age less than one, will then be obtained thus:

Year's risks. Half year Deaths
 deaths. per annum.

$$2834 (2713 + \frac{2}{2}) : (243 \times 2) 486 :: 100 : 17,148$$

In the following years the risks being mostly of the entire year the calculation is more simple.

$$2430 + \frac{4}{2} = 2679 : 498 :: 100 : 18,589.$$

The above explanation will make the following table quite intelligible.

Ratio of mortality deduced from the Registers of the Lower Orphan School of Calcutta.

Age.	Lives at risk reduced to the complete year.	Total deaths.	Percentage.	Boys living on 31st December.	Deaths of boys.	Percentage.	Girls living on 31st December.	Deaths of Girls.	Percentage.
0	2.646	451	17.044	2.713	243	17.148	2.766	238	14.498
1	5.206	994	19.093	2.430	493	18.589	2.436	496	18.483
2	4.466	356	7.970	2.169	186	8.222	2.203	170	7.430
3	4.023	193	4.794	1.968	113	5.583	2.030	80	3.864
4	3.678	142	3.860	1.845	65	3.523	1.790	77	4.212
5	3.458	108	3.123	1.725	56	3.194	1.788	52	2.869
6	3.235	91	2.813	1.587	42	2.611	1.677	49	2.880
7	2.992	71	2.373	1.451	41	2.787	1.572	30	1.890
8	2.718	72	2.649	1.314	36	2.727	1.431	36	2.491
9	2.470	29	1.174	1.186	15	1.257	1.322	14	1.053
10	2.159	50	2.311	956	33	3.396	1.210	17	1.395
11	1.863	38	2.039	750	20	2.630	1.140	18	1.566
12	1.588	20	1.259	528	8	1.504	1.071	12	1.113
13	1.230	18	1.463	287	3	1.045	951	15	1.565
14	930	6	0.645	138	1	0.724	799	5	0.624
15	696	10	1.451	70	6	8.219	626	4	0.636
16	484	9	1.859	35	3	7.692	449	6	1.327
17	315	7	2.222	19	..	..	295	7	2.349
18	209	5	2.392	14	1	..	194	4	2.040
19	142	1	0.704	11	..	..	131	1	0.763
20	97	2	2.061	8	1	..	89	1	1.123

Mortality of the Orphan School computed on 1,00,000 lives, and compared with the decrement of European tables.

Years of age.	Calcutta Orphan School.		Northampton.	Carlisle.	London Bills from Phil. Transactions.	Halley's Breslau table.	Dr. Price's calculation from London bills of mortality.
	General table.	Girls table.					
0	17,044	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
1	82,956	85,502	74,249	84,610	82,699	85,500	68,305
2	67,118	5,349	62,515	77,790	72,206	79,800	57,996
3	61,769	2,961	58,206	72,740	67,746	76,000	52,213
4	58,808	2,269	55,330	69,930	64,598	73,200	48,008
5	56,539	1,765	53,639	67,970	62,356	71,000	45,204
6	54,774	1,540	51,060	66,760	60,887	69,200	43,452
7	53,234	1,263	50,858	65,940	59,942	69,000	42,338
8	51,971	1,376	49,914	65,360	59,217	67,000	41,602
9	50,595	1,093	49,327	64,930	58,688	66,100	41,042
10	50,002	1,155	48,812	64,630	58,247	65,300	40,387
11	48,847	996	48,366	64,310	57,858	64,600	40,132
12	47,861	602	47,937	64,000	57,535	63,400	39,677
13	47,249	691	47,508	63,680	57,212	63,400	39,222
14	46,558	300	47,079	63,330	56,894	62,800	38,767
15	46,258	671	46,650	62,980	56,573	62,600	38,312
16	45,587	850	46,221	62,500	56,262	61,600	37,857
17	44,737	1,994	45,776	62,170	55,942	61,000	37,402
18	43,743	1,046	45,279	61,740	55,618	60,400	36,947
19	42,697	300	44,738	61,310	55,283	59,800	36,474
20	42,397	873	44,163	60,830	54,931	59,200	36,001
	41,524	45,961	43,545	60,450	54,559	58,600	35,511

It will be seen from this table, that the percentage of mortality is almost universally worse amongst the boys than the general average, and amongst the girls better. The only ages which are exceptions are 4 years, 6 years and 13. The last may be susceptible of some explanation, as it might be expected that the girls at that age should be more liable to disease than the boys, but not so the other two, in which the difference indeed is not very wide from equality, and may therefore be accidental.

The consecutive increased mortality amongst the boys will, however, require more careful notice.

In the first three years of life when both sexes receive equal care, the per centage difference is only as follows :

Boys.			Girls.		
Lives.	Deaths.	Per ct. per ann.	Lives.	Deaths.	Per ct. per ann.
7775	1120	14.404	7842	1082	13.798

equal to a difference between the sexes of one in 24. In the second three years it increases, being

Boys.			Girls.		
Lives.	Deaths.	Per cent.	Lives.	Deaths.	Per cent.
5656	237	4.190	5712	209	3.659

equal to a difference of nearly one in seven. In the next five years it becomes

Boys.			Girls.		
Lives.	Deaths.	Per cent.	Lives.	Deaths.	Per cent.
6576	167	2.538	7284	146	2.004

or more than one quarter in excess for the boys ; and from the age of 11 to 15 it is as high as

Boys.			Girls.		
Lives.	Deaths.	Per cent.	Lives.	Deaths.	Per cent.
1791	38	2.121	4613	54	1.170

or nearly double.

The number of boys becomes so small after the age of fifteen, that it is needless to pursue the comparison, but the deaths amongst 70 and 38 boys of the ages of 15 and 16 respectively being so high as 8.219, and 7.692 per cent., there is reason to believe that in respect to the youths of this sex after the age of 14, the institution is merely a hospital, the healthy boys being all apprenticed out, or otherwise disposed of, while the sickly remain, because they are unfit to enter the army as musicians, or to undertake any trade or profession.

But this circumstance, though it accounts for the large mortality amongst the remnant of boys after 14 and 15 years of age, will not account for the consecutive increased mortality on the large numbers

of the previous ages. I fancy the circumstance must be attributed in part to the greater exposure the boys suffer, and the harder living they are inured to, and in a great measure perhaps to the mortality known to have prevailed amongst the boys, when they were at the other school-house over the river, which was given up in consequence of its insalubrity.

For practical purposes, therefore, the ratio of mortality calculated from the deaths amongst the boys of the Orphan School institution, must be set aside as too unfavourable for an average. The girls' deaths for the same reason afford a better average than the general table, which includes both sexes; and, being more favourable, the results on the girls' lives correspond better with the results of the European tables, which I have collected for comparison.

I have not been able to lay hand upon any explanation in detail of the precise manner in which the Northampton and Carlisle tables were framed. I have great doubt, however, if, for the early ages especially, the results have been deduced from data, which can lay equal claim to accuracy, with those used for the table I now present to the public. The means may readily be forthcoming of ascertaining the number of deaths, which occur in a town or in any community, and the ages of the persons dying are of course entered on the burial registers, but it is by no means so easy to number a fluctuating population, and to register the ages of each individual, so as to get at the number of risks at each age, upon which the casualties by death have occurred. The great difference observable in the rates of decrement in the different tables of Europe seems to confirm the doubt, as to the correctness of this material of the calculations upon which they are based: and the results of the London bills of mortality, as given in Dr. YOUNG'S article in the Philosophical Transactions, compared with Dr. PRICE'S Table framed from the same bills, afford a further confirmation of the doubts entertained, in respect to the accuracy of any we yet possess. The only tables known to be constructed from perfect data, are those of the Equitable Life Insurance Office, but these are confined to lives of ages exceeding twenty years*. It will be seen that the London table of the Philosophical Transactions comes nearest to those framed upon the Orphan School registers as far as the age of six years, and after that age Dr. PRICE'S table framed from the same

* The total number of Equitable lives between 10 and 20 is less than 1500 which is quite insufficient for an average upon those ages.

materials. The decrement in India is, as might be expected from the climate, greater from birth than in London, but the favourable years are the same, viz. from nine to fourteen, and there will be observed, with due allowance for insalubrity, and for not perhaps the most favourable rearing in a large school like our Orphan Asylum, that there is a general correspondence in the results up to the age of six. After that age the London decrement, in the first table given, is unaccountably small compared with ours, as well as when compared with that of Dr. PRICE, and is less than in many other European tables. I have seen in a recent publication the following statement of the mortality of the children brought up in the Blue Coat, or Christ Church School in London.

	Lives.	Deaths per ann.
From 1814 to 1818	5130	51
1818 to 1823	5193	44
1824 to 1828	5412	40
1829 to 1833	5670	36

From this it would seem that the deaths in the early period were about one per cent. per annum, but are reduced to two-thirds per cent. in later years. Assuming the lives comprehended in the statement to be from seven years old to fifteen, we have from the girls' table of the Orphan School for the same ages the following result :

Lives.	Annual Deaths.	
10,121	151	or one and a half (1.49) per cent. which is a double mortality for our Calcutta institution, as compared with that of the London school, at the most favourable period.

The general bills of mortality for London, as given in the Philosophical Transactions, show for the same age an average rate of decrement of 0.70 per cent.*, which would lead to the conclusion, that for those ages the table is not perfect : for it is not possible to conceive, that the general population of a city like London, including the half-starved ragged children of the penniless poor, are subject to fewer casualties by death, than the well-fed and well-clothed inmates of this richly endowed institution.

Dr. PRICE in his table calculated from the London bills of mortality, gives a ratio of deaths for this period of life uniformly exceeding one per cent., being in the aggregate, upon 102,190 risks, 1280 deaths, or one and a quarter per cent. per annum, which is borne out

* Lives, 5,22,172—Deaths, 3704.

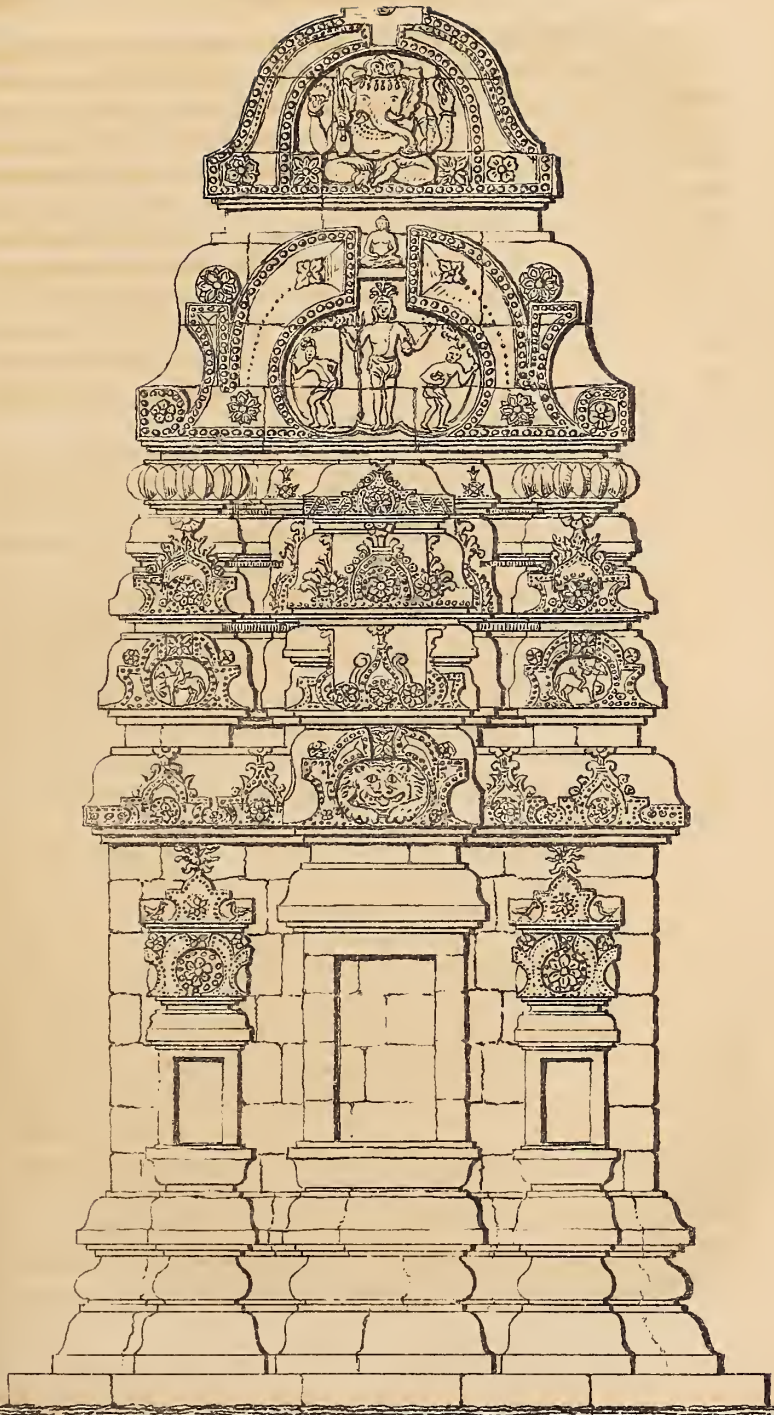
by the results of the Blue Coat school, and corresponds more nearly with the ratio deduced from our girls' table. Dr. PRICE's rate however for the first three years of life, and especially for the first year, is so much higher than that of any other table, as to make it probable, that he has adopted a different method of computing the early deaths. Perhaps also he has included the children still-born amongst the deaths of the age 0, whereas our table of course excludes these, and for the most part the additional risks of the first month after birth.

September, 1838.

VII.—*Sketch of the Temple to Durga at Badèswur, &c. extracted from Lieut. KITTOE's Journal.*

Before reaching the small town of *Badèswur* situated just beyond the *Mulakaí* nullah, there is at its debouchure an isolated hill with a modern temple to MAHÁDEVA on the top of it, built by a Mahratta lady; at the foot of this hill, on the southern face under some large tamarind trees, is a very curious and ancient temple to DURGA; it is in the same style with that of *Kundhurpur*, and likewise unfinished; the plinth is buried in the sand; it is very small, about 6 feet wide, 9 long, and 14 high. The accompanying drawing represents the elevation on the south side, and will serve to illustrate this peculiar style, the large temples only differing in proportion, and in the increased number of compartments, but not in ornament; the idols are destroyed. *Vide Pl. XL.*

The small town of *Badèswur* is certainly the neatest and most picturesque place I have seen; there is one long street which is very broad, having a row of small gardens up the centre of it with trellis work coverings, over which beans and other creeping esculents and flowering plants are trained, forming one continued bower; at intervals there are fantastic vases made of pottery in which the tulsi plant is cherished: some of these are very tastefully constructed. There are also several wells with terraces round them; the houses are all elevated on plinths with narrow ledges projecting beyond the walls; the thatches also project considerably so as to admit of the rain falling clear of all; these ledges serve for the people to sit on in the fine weather. There is a mart here for grain, iron, cotton, cloths, silk dhotis, ironmongery, &c. which are both manufactured and brought from the neighbouring places; the unwrought iron comes from *Ungool*; there is a ferry here and a direct road to *Nyuhgurh* and *Berhampur* in the *Madras* Presidency.





The hill of *Badēswur* is a quarter of a mile beyond the town, at the foot of it, and on the east side are several small temples of antiquity, but destroyed by modern innovations : there is also a fine stone well.

I observed several idols executed in a very superior style in chlo-rite ; amongst them was a figure of BUDH erect, with the different Bud-dhas in the sitting posture encircling him, similar to that dug up at *Sarnáth* by Lieutenant CUNNINGHAM ; it was besmeared with sendoor and ghee, the same as the other idols. I endeavoured to persuade a brahman, that he was guilty of heresy in thus worshipping BUDH ; he assured me that it was not BUDH, but MAHA'DEVA. So much for the knowledge of the people of *Orissa*, for I have remarked the same wherever I have been.

We descended at this place into the bed of the river ; then after rounding the hill and passing the mouth of a large nullah called the *Kálágiri*, we re-ascended the bank and entered another extensive plain which continued uninterrupted till half a mile beyond where our camp was pitched at *Puddumbutte* : it also extends for several miles south of the river.

The hill of *Badēswur* has a volcanic appearance and consists of a brick-red marl and masses of gravel, breccia, and decomposed granite. It is about 300 feet high and rises abruptly from the river, on the opposite side of which (to it) is another rock forming an island having an equally curious appearance ; there is a temple on it also, for all such singular places are looked upon as the abodes of some " thakoor " or form of the deity, and resorted to accordingly.

VIII.—*Proceedings of the Asiatic Society.*

Wednesday Evening the 10th October, 1838.

H. T. PRINSEP, Esq. Vice President, in the chair.

Lieut. J. DUNCAN, and Dr. HELFER, proposed at the last meeting, were unanimously elected members of the Society.

JAMES MIDDLETON, Esq. of the Hindu College, proposed by the Secretary, seconded by the Vice President.

Oriental Publications.

Read a letter from the Secretary of the Bombay Branch of the Royal Asiatic Society, acknowledging the receipt of the Arabic works published by the Society.

Read the following correspondence relative to the interchange of works of Oriental Literature with the Egyptian Government :

To J. PRINSEP, Esq., Secretary to the Asiatic Society, Calcutta.

SIR,

I am directed by the Right Honorable the Governor General to transmit to you, for submission to the Asiatic Society, the accompanying copies of papers relating to the interchange of works of Oriental Literature between India and Egypt, proposed by GUETANI BEY, a Spanish gentleman at the head of the Medical establishment at the latter place: and to convey the wish of His Lordship, that the Asiatic Society will be pleased to favor him with their opinion on the points indicated in my letter of the 18th instant, with a view to acknowledge in some measure, the handsome overture made by GUETANI BEY. In the meantime, Major FELIX has been requested to forward to your address the books, per list No. 1, which have been already received from Egypt, and are in his possession, excepting the "Biography of celebrated Philosophers by ABDULLA BIN HOOSSEN" which is herewith sent, advising you of the date and name of the vessel on which the books may be forwarded to Calcutta.

I have, &c.

W. H. MACNAGHTEN,

Secy. to the Govt. of India with the Govr. Genl.

Simla, }
20th Aug. 1838. }

To the Secretary to the Govt. of India in the General Department with the Governor General.

SIR,

I beg leave to state, that while at *Lahore* on my recent Mission, I received two letters from Major FELIX, private Secretary to the Governor of *Bombay*, dated June the 8th and July the 5th, the first forwarding a letter to my address dated *Cairo*, the 16th of April, from Col. DE HEZETA, who returned from India to Europe via *Egypt* last cold season, and from GUETANI BEY, a Spanish gentleman at the head of the Medical Establishment in *Egypt*, dated *Alexandria*, the 11th of May.

2. I have annexed extracts from Major FELIX's letters and from that of Col. DE HEZETA, together with a copy of GUETANI BEY's communication, and of the two lists which he has furnished of European works translated into Arabic. No. 1, is a list of the books actually sent to India by the BEY, and No. 2, is a list of the books translated, which the BEY expresses his willingness to send should a desire be expressed to have them.

3. The Governor General will observe, that my learned correspondent expresses his conviction that the Governments of *Bombay* and *Calcutta*, animated by the same desire of being useful, have published similar translations in different Oriental languages, and that an interchange of these works between India and *Egypt* would prove of the greatest utility, as well to the people who are under the beneficent rule of Great Britain, as to those who obey "the regenerator, MAHOMED ALI."

4. I am apprehensive, that, as regards translations on this side of India, we shall be able to make but a very poor return to *Egypt* for the valuable collection transmitted by GUETANI BEY. I would venture to suggest, that the Government of *Bombay* be requested to furnish a list of all works which have there been translated into the Oriental languages, and that I be authorized to forward a copy of this correspondence to the Secretary of the Asiatic Society at *Calcutta*, with a request, that that learned body be solicited to furnish their opinion, as to the most appropriate mode of acknowledging the handsome overture of GUETANI BEY, and as to whether it would be advisable, with reference to our inability to make a suitable return, to request a further supply of works according to the list No. 2. It occurs to me as being possible, that the Society may deem it proper to lay out a portion of the funds, which the Honorable the Court of Directors have recently placed at their disposal for the encouragement of Oriental Literature, in the purchase of some of the works published in *Egypt*, and thereby in some degree to aid the useful labors which are there being prosecuted.

5. I would further suggest, that I may be authorized to request Major FELIX to forward to the Secretary of the Asiatic Society at *Calcutta*, the works which have been already received in *Bombay* from *Egypt*.

6. One specimen of these works being the "Biography of celebrated Philosophers by ABDULLA BIN HOUSEN," has been sent to me by Major FELIX. It is submitted herewith for the inspection of His Lordship. I have looked into this work here and there, and the style appears to me to be extremely perspicuous and good.

I have, &c.

(Signed) W. H. MACNAGHTEN.

Simla, }
18th Aug. 1838. }

*A Monsieur Le Chevalier, W. H. MACNAGHTEN,
Secrétaire du Gouvernement du département de Calcutta.*

MONSIEUR,

Graces aux heureux évènements politiques qui ont décidé depuis quelque lustres des destinées des nations, la civilisation Européenne a pénétrée en orient et continue à y faire tous les jours de rapides et douces conquêtes sous l'influence de la propre convention dictée par l'exemple de nos mœurs, et les principes de notre impartiale justice.

La connaissance des ouvrages scientifiques les plus remarquables, issues des plumes des savans d'occident est sans nul doute le moyen le plus propre pour parvenir à un complet résultat.

L'illustre et renommé MEHEMET ALY PACHA intimement persuadé de cette vérité en a fait traduire plusieurs en langue Arabe et continue sans relache cette œuvre de philanthropie.

Je n'ignore pas que les gouvernemens éclairés de Bombay et de Calcutta animés du même esprit civilisateur ont fait publier des semblables traductions en diverses langues orientales.

Mon digne compatriote Mr. le Colonel de HEZETA, dont vous trouverez ci joint une lettre d'introduction m'a aussi parlé à son passage par ce pays dont la manière la plus favorable, des efforts du gouvernement Anglais pour déraciner l'ignorance qui depuis tant de siècles a abruti les habitants de l'Inde. Nous avons pensé qu'un échange de ces ouvrages pourrait être de la plus grande utilité pour les peuples qui ont le bonheur de se trouver sous la bienfaisante domination de la Grande Bretagne, aussi bien que pour ceux qui obéissent à MEHEMET ALY le régénérateur. J'ai communiqué cette idée au Viceroi qui en a apprécié toute la valeur et les biens qui en pourront résulter. En conséquence j'ai l'honneur d'envoyer un exemplaire de tous les ouvrages scientifiques imprimés au Caire en langue Arabe par ordre de S. A. à l'usage des établissemens d'instruction, que je vous prie d'agréer comme témoignage de mon estime et considération.

Nous avons envoyé encore d'autres ouvrages traduits dont je joins ici la nôte S'ils peuvent vous être agréables je me ferai un vrai plaisir de vous les adresser dès que j'en serai informé.

Agrez M. le Secrétaire l'hommage de ma considération la plus distinguée

*Le premier Medecin Chirurgien de S. A. A. V. Roi d'Egypte, &c. &c.
Alexandrie, le 11 Mai, 1838.*

(Signed) GAETANI BEY.

List of Arabic books.

- 2 Copies. A Treatise on military discipline.
- 2 „ A work on medical science, by MAHOMED HURROWEE.
- 2 „ Ditto on mineralogy, by REFUAH BUDWEE.
- 2 „ Treatise on Geometry, by MAHOMED BOYUMEE.
- 2 „ Ditto on anatomy, by MAHOMED HURROWEE, and SHEIK MAHOMED RUSHEEDEE.
- 2 „ Ditto on Surgery, by MAHOMED HURROWEE.
- 2 „ Ditto Medicines, ditto.
- 2 „ Art of Judging of diseases, by ditto.
- 2 „ Treatise on the preparation of Ointments, by MOOSTUFA HUSSON.
- 2 „ Signs by which Domestic animals may be judged of, by ditto.
- 2 „ Treatise on the cure of horses, by ditto.

- 2 Copies. Geographia, or work on geography, by REFUAH BUDWEE.
 2 „ Elements of Philosophy, by MAHOMED HURRAWEE.
 1 „ Biography of celebrated philosophers, by ABOULLA BIN HOOSEIN.
 2 „ Treatise on the use and advantages of the several members of the body, by MAHOMED HURRAWEE.
 2 „ Explanation of uncommon terms; by REFUAH BUDWEE.

Ouvrages traduits in Arabe et imprimés.

- | | |
|--------------------------------|--------------------------------------|
| 1. Anatomie générale humaine. | 9. Pharmacie, id. |
| 2. Anatomie descriptive, id. | 10. Traité de l'extérieur du Cheval. |
| 3. Traité de chirurgie. | 11. Traité de Mineralogie. |
| 4. Physiologie. | 12. Géographie. |
| 5. Patrologie interne humaine. | 13. Vie des Philosophes. |
| 6. Hygiène. | 14. Géometrie descriptive. |
| 7. Traité de Pharmacie. | 15. L'Ecole du soldat et de Pelotor. |
| 8. Anatomie Vétérinaire. | |

Ouvrages traduits en Arabe et sous presse.

- | | |
|------------------------------------|--------------------------------------|
| 16. Physique. | 18. Histoire du moyen-âge. |
| 17. Abrégé de l'histoire Ancienne. | 19. Traité de bandages et appareils. |

Ouvrages traduits et à imprimer.

- | | |
|--|--|
| 20. Traité de Botanique. | de la Géographie de Malte Brun (le traduction de cette ouvrage se continue.) |
| 21. Chimie d'Orfila. | 41. Guide du Juge militaire, |
| 22. Traité de Chimie. | 42. Traité de Mythologie. |
| 23. Traité des accouchemens. | 43. Progrès de la Civilisation en Europe. |
| 24. Manuel de l'accouchemens. | 44. Traité d'Agriculture. |
| 25. Physiologie de bagoas. | 45. De la culture du murier par Julien. |
| 26. Pharmacie pratique. | 46. Manuel des Sapeurs. |
| 27. Pharmacie végétale. | 47. Traité de Géometrie Militaire. |
| 28. Chimie pharmaceutique. | 48. Table des Logarithmes. |
| 29. Géographie physique. | 49. Vade mecum des medecins Vétérinaires. |
| 30. Géographie élémentaire. | 50. Formulaire Vétérinaire. |
| 31. Traité des Poisons par Orfila. | 51. Règlement sur le service médical Vétérinaire. |
| 32. Géometrie. | 52. Pathologie interne Vétérinaire. |
| 33. Arithmetique. | 53. Pathologie externe Vétérinaire. |
| 34. Algèbre. | 54. Matière médicale Vétérinaire. |
| 35. Traité de mécanique. | 55. Anatomie générale Vétérinaire. |
| 36. Histoire Moderne. | 56. Traité des Articulations. |
| 37. Logique de Dumarsais. | |
| 38. Histoire de Charles XII. | |
| 39. Elemens et principes du droit naturel. | |
| 40. Les quatres premiers volumes | |

Ouvrages traduits en turcet imprimés.

- | | |
|--|--|
| 57. Réglemens sur les services interieur d'infanterie. | 64. Traité. |
| 58. Ordonnances sur les exercices et manœuvres d'Infanterie. | 65. L'Art de la guerre. |
| 59. id. id. id. de Cavalerie. | 66. Geometrie de Legendre. |
| 60. id. id. id. d'Artillerie. | 67. Campagne de Napoléon en Italié. |
| 61. Règlemens sur la fabrication et des Armes. | 68. Histoir de Napoléon ecrite par lui-même à Sainte Héléne. |
| 62. Services des officiers. | 69. Logique de Dumarsais. |
| 63. Règlement sur le service en Campagne. | 70. Histoire d' Alexandre le grand (sous presse.) |

Je prie, Mr. Le Secretaire, d'envoyer une copie de cette Note à Calcutta.

(Signed)

GAETANI BEY.

*Extracts of letters from Major FELIX and Col. J. DE HEZETA.**From Major O. FELIX, dated 8th June, 1838.*

"I enclose a letter which came under cover to me from a Spanish gentleman who is now the head of Medical establishment in *Egypt*. He has also sent a great many books printed in *Cairo*, which are translations from European authors into Arabic; but, as I think it probable that you will desire them to be sent to Calcutta, I shall not forward the box till I hear from you.

"Of course the BEY explains his motives for opening this correspondence, but I am assured by Col. DE HEZETA that he is a man of talent and consideration."

From Major O. FELIX, dated 5th July, 1838.

"I enclose two lists which GAETANI BEY "Le premier medecin chirurgien de S. A. A. V. Roi d' Egypte," as he styles himself, has requested me to forward to you.

"No. 1, is a list of the books he has sent, and No. 2, a list of all that have been translated into Arabic at *Cairo*, and any, or all of which he will be happy to be allowed to present to you.

"I have packed the books named in list No. 1, and shall keep them till I hear from you."

From Col. DE HEZETA, dated Cairo, 16th of April, 1838.

"You will readily excuse that I intrude on your valuable time, when you will see that my letter has for its object the promotion of education in India, by means of elementary and didactic works well translated in the vernacular languages. Travelling in this country I had the good fortune to meet my countrymen GAETANI BEY and CLOT BEY, the first, the favorite and personal physician to his Highness the PASHA, and the second the chief inspector of hospitals, and both the creators of a medical college not only of males, but also of females for the obstetric art. They have had the merit of overcoming by dint of perseverance and energy, and even at the risk of their lives, all the prejudices of the Moslem, and to see them dissect, and some have already performed on living subjects delicate cases of lithotomy. No sooner I heard of the great number of translations which they have caused to be made into Arabic of medical works which are already printed, I saw the great advantages which might result to India and *Egypt* from a mutual interchange of such works. My wishes have been met with alacrity on the part of these high-minded and learned individuals, and the consequence is the public letter which will accompany this. I have no doubt that Lord AUCKLAND and yourself will sympathize with him in philanthropy.

"What would your Education or School Committee have said if they had witnessed as I did four days ago a polytechnical school, which deserves completely its name and in which every branch of mathematical science is taught without the help of any European language?

"This, I acknowledge, is carrying the thing too far, for we ourselves cannot be thoroughly learned without the assistance of the classical languages. But I prefer even this, to making a distantly foreign language the vehicle of all elementary learning."

MR. SUTHERLAND, Secretary, Committee P. Instruction, informed the Society that the essays intended to compete for Mr. MUIR's prize must be delivered in by the 15th March, 1839.

Library.

The following books were presented to the Asiatic Society:

The Philosophical Transactions of the Royal Society of London, for the years 1825-6-7—from the Royal Society.

The list of the members of the Royal Society for the 30th November, 1837.

Proceedings of the Royal Society, Nos. from 18 to 31, in the years 1834—1838.

Abstracts of the papers printed in the Philosophical Transactions of the Royal Society of London, from 1830 to 1837 inclusive, vols. 3. 1830 to 1837.

Address of his Royal Highness the Duke of Sussex, K. G. &c. &c. the President, read at the anniversary meeting of the Royal Society, on Thursday, November 30, 1837.

Address to Her Majesty referred to in the address of H. R. H. the President of the Royal Society.

Defence of the resolution for omitting Mr. PANNIZZI's Bibliographical notes from the Catalogue of the Royal Society.

The Sixth Report of the British Association for the advancement of science, vol. 5—*presented by the Council.*

Annual Report of the Regents of the University of the State of New York—*by the Regents to JAMES PRINSEP, and by him to the Society.*

A Catechism in the *Tai* or *Shyan* language, by NATHAN BROWN, Esq. printed at *Sadiya*—by Captain JENKINS.

Tarjamah Kitab ul Filasafat, an Arabic work, printed at the Government Press of MAHOMED ALI, at *Cairo.* [See correspondence above.]

Meteorological Register for August 1838—*by the Surveyor General.*

Meteorological Registers from Mauritius in continuation of the series before sent—*by M. JULIEN DESJARDINS.*

LARDNER'S Cabinet Cyclopaedia, "Statesmen," vol. 5th—*from the Booksellers.*

Two Arabic books, printed, entitled "Destur-ul-Qorât," and "Fatawa Ekhtiyâr"—*presented by Maulavi ZA'HUR ALI.*

The Gardens and the Menagerie of the Zoological Society delineated, 2 vols. purchased at 16 rs. on recommendation of the Museum Committee.

Literary and Antiquities.

A despatch from the Acting Secretary at *Bombay* forwarded, through the Government of India, Lieut. POSTANS' journal of his visits to *Girnar.*

The facsimiles of the inscriptions are stated to be on their way—when we shall be able to revise the translations and place the whole upon sure foundations.

Extract of a private letter from *Professor LASSEN*, dated *Bonn*, 12th February, 1838, (which however only reached *Calcutta* on the 16th September) was read by the Secretary, announcing his discovery of the *Bactrian* language being closely allied to, if not identical with, the *Pâli*, and propounding a new alphabet, in almost exact accordance with that adopted in the July No. of the *Journal.*

We venture to extract the passage alluded to :—

"To the very curious fact, that those inscriptions are in *Pali* (or perhaps *Prakrit*), let me present you with the analogous one, that the legends of the *Bactrian* coins, at least in my opinion, are also in *Prakrit.* But here I must ask your pardon for some alterations I make in your alphabet of that character. The letter Ψ or Ξ cannot, I think, be *á*, because this vowel is not expressed by any sign in other places, where it ought to be written. I propose to read it \mathcal{J} or *j*. Then I find, that \mathcal{K} may every where be read \mathcal{C} or *h*. The legend on the coin of *AMYNTOΣ* (*Asiatic Journal*, v. p. 720) I read thus: *Maharajô jayavatô amito.* This dialect omits *n* before *t* and *d*, as the names prove; *jayavatô* is therefore the *Prakrit* जयवन्तो, Sanskrit जयवान्, the victorious. The word for *ἀνίκητος* is *apalihatô*, the *Prakrit* of the Sanskrit अप्रतिहतः, the unrepulsed. The coin of *Ayos* (vol. IV. plate XXII. No. 1.) I read: *Maharajô rajadirajô mahatô Ayô.* You have yourself observed, that \mathcal{D} *di*, is the correct reading. *Mahatô* is again for महन्तो, the great. The name of *MENANDER* would in *Prakrit* drop the *r* (in *vanδpov*), and this western dialect besides the *n* before *d*. I

therefore suppose, that the penultimate letter is in fact another *d*, and that the spelling is *minadô*. This *d* recurs in the title for *just*; which may be *damikô*, or घामिको v. धमिको in Prakrit.

“The uncurtailed form of *k* is, if I may be allowed to go on with my conjectures, κ , and not the figure, you have adopted from the coins of *EUCRATIDES*. I appeal to those of *ANTIALKIDES* and to the titles, in which κ is immediately before the final *ô*. The term for saviour, I am not so certain of; it may be *tatarô*, that is the Prakrit तातारो or perhaps तादारो for the Sanskrit चाता, the rescuer. The name word for *brother of the king* puzzles me very much, and I am as yet quite at a loss. The curious coin of *AGATHOCLEIA* presents another difficulty. *θεότροπος* is really a Greek word found in late writers, as *HELIODORUS*, as for instance as epithet to $\xi\eta\lambda\omicron\varsigma$ ‘a zeal which emulates the gods.’ It is generis communis and the genitive of the feminine like the masculine: therefore I propose reading $\Theta\epsilon\omicron\tau\rho\omicron\pi\omicron\upsilon$, if I am not mistaken, the omicron is still visible. Do not, I pray, take this correction unkindly, we have at *Bonn* no Bactrian coins, but plenty of Greek dictionaries. The reverse cannot have the name of the queen, on account of the termination in ρ , δ and I believe you are quite right, when you suppose the epithets to be (great) king and saviour. The name might by my alphabet be read *Mikônidô*, in fact *Μυμωνίδης* may be a Greek word, though I cannot prove its real existence as a name.

“It will please you to hear, that your conjecture on *τεσσαριστον* has also been proposed by a German translator of *Strabo*, Mr. *GROSKURD*, who, however, has not had the happy thought of comparing the name with *Surâshtra*. Some manuscripts leave out the *τεσ* entirely, and this I should prefer reading *τήντε Σαριδίου καλουμένην καὶ τὴν Σιγερτίδος βασιλείαν*. My conjecture *Trigerte* is hardly tenable; it must be some country on the coast. *PTOLEMY*’s *Syrastrene* is the peninsula of *Guzerate*, and the kingdom of *SIGERTIS* (श्रीमर्त in Sanskrit?) must be placed near *Baroda*. *PTOLEMY* has a town, *Siripala* on the *Nerbudda*, where it is joined by the *Mophis* or *Myhes*, at least according to his information. Here at all events we must seek for *SIGERTIS*.”

A letter from Professor *SCHLEGEL* of the same place, acknowledged the receipt of the 2nd and 3rd vols. of the *Mahâbhârata*, and of the *Journal*. He hopes shortly to present a return in kind. The following extract alludes to a discussion which occupies the learned of Europe at present:

“J’ignore si le *Journal Parisien*, *la Revue des deux Mondes*, vous parvient à *Calcutta*. Dans cette supposition les deux autres pièces n’auraient besoin d’aucune explication ultérieure. Dans le second cahier du mois d’Août 37 se trouve un mémoire de M. *LETRONNE*, inscrit: *Sur l’origine Grecque des Zodiaques prétendus Egyptiens*. M. *LETRONNE* occupe le premier rang parmi les Hellenistes et les antiquaires de la France actuelle; j’entretiens avec lui des relations fort amicales. Il a cru par erreur que j’adhérais à son hypothèse; ce qui m’a forcé d’entamer cette discussion. Les assertions de M. *LETRONNE* vont plus loin que le titre de son Mémoire n’indique: il veut que les douze constellations du zodiaque, partout où elles se trouvent, auraient été empruntés aux Grecs. J’abandonne les Egyptiens à leur sort: je pense qu’ils se tireront d’affaire. Mais quant aux Indiens, je proteste. Dans les quatre distiques Sanskrits de ma façon* vous trouverez une indication légère de mes principaux arguments, dont j’ai développé une partie seulement dans le journal orientaliste de M. *EWALD*. J’examinerai ensuite la nomenclature Indienne et vraiment ancienne dans son rapport avec les zodiaques sculptés. Je n’en connais que deux qui aient été gravés: l’un dans les *Transactions Philosophiques*, de la *Soc. Royale des Sciences* pour l’an 1772 (répété par *Bailly*), l’autre dans les mémoires de la *Soc. Asiat. de Londres*, vol. III. pl. 1. M. *LETRONNE* les rejette comme modernes. Cela n’est peut-être pas bien sûr, au moins à l’égard de celui du *Cap Comorin*: mais soit! je le veux bien. C’est un argument en ma faveur.

* We have not space to insert the Sanskrit verses.—Ed.

“ Votre illustre Société accordait autrefois à ses associés Européens le droit de lui adresser des questions, et d'indiquer des sujets de nouvelles recherches. Permettez-moi d'user de ce privilège. Je désirerais diriger l'attention de vos savans compatriotes qui séjournent dans diverses parties de l'Inde vers les zodiaques sculptés qui peuvent se trouver dans les ruines des anciens temples, soit Brahmaniques, Bouddhistes, ou Jaina. Je pense que des dessins exacts serviraient à éclaircir l'histoire de l'astronomie.

“ Voici une autre question. Les astronomes Indiens d'aujourd'hui connaissent ils encore une constellation de l'hémisphère austral, au-delà du tropique du Capricorne, appelée Triçancou, et figurée comme un hérisse précipité d'en haut? Cela se rapporte à un passage très remarquable du *Ramáyana*.”

Captain T. S. BURT, Engineers, announced the discovery of two more ancient pillars near *Ghazipur*. One at *Zamineah* (already well known, and not having any inscription), the other at *Palládpur*, half buried in the ground, but from which by digging under it, he contrived to take off the inscription it contains—a single line in the Asoka character of the *Girnar* rock. No. 3 of the table in plates 13, 14.

Statistics.

Lieut. H. SIDDONS presented a statistical table for the zilla of *Chittagong*, founded on the revenue survey now conducting under him.

Mr. H. T. PRINSEP presented a paper on the rate of mortality from birth to 20 years, calculated from the records of the Lower Orphan School. The voluminous calculations and tables which had to be prepared before obtaining the results embodied in the paper itself, were presented for deposit in the Society's Library.

[This paper is printed in the present number.]

Physical.

Read a letter from Secretary Political Department enclosing one from Capt. BURNES, dated 17th September, making over to the Society the whole of the drawings of natural history collected during the mission under his command.

The drawings of animals are 15 in number including mammalia, birds, fishes, and snakes; they are beautifully executed and highly coloured.

The following letter from Government on the subject of Dr. HELFER's collection was read:

To JAMES PRINSEP, Esq. Secretary to the Asiatic Society.

SIR,

I am directed by his honor the President in Council, to transmit to you the enclosed copy of a letter from Dr. HELFER, and to request the opinion of the Society, whether the completeness of the collection brought by that gentleman from the Tenasserim Provinces, will be affected by acceding to his request to be permitted to select such duplicates as are not required by Government; also, to solicit the advice and assistance of the Society in the separation of the articles that may be spared.

I have, &c.

(Signed) H. T. PRINSEP,

Secretary to Government of India.

Fort William, 12th September 1838.

To H. T. PRINSEP, Esq., Secretary to the Government of India and Bengal.

SIR,

I have the honor to inform you, that I have arranged and classified the ornithological part of my collections brought from the Tenasserim Provinces, and deposited them at the Asiatic Society's rooms.

Placing them at the disposal of Government I beg to select those specimens which are considered desirable, returning me such duplicates which are not wanted, agreeable to the permission expressed in the 13th para. of my instructions.

“In conclusion, with reference to Dr. HELFER’s request, that he may be permitted to make private collections for himself, I am directed to inform you, that in his Lordship’s judgment, all the specimens which he may acquire, ought to be placed in the first instance, and without reserve, at the disposal of Government. But there can be no objection to his making duplicate or more collections, and such articles as it may not be considered indispeusable to retain, will be freely returned to him.”

I have, &c.

(Signed)

J. W. HELFER.

The Secretary explained that the Museum Committee had held a meeting to consider what to recommend to the Society on the question submitted by Government, and their opinion was, as the collection was so extensive, (containing 6 or 8 of each species) that it should be divided into three parts, the principal one for the Hon’ble Court’s Museum, the second for the Society’s, and the remainder for Dr. HELFER himself, who was satisfied with this division.

The Society confirmed the arrangement which was directed to be communicated to Government.

Dr. HELFER read his notice “On the natural history of the Tenasserim Provinces,” as agreed at the last meeting.

The thanks of the Society were expressed by the Vice President for his interesting communication.

Lieut. HUTTON wrote from *Simla* in continuation of his last report: that he was ordered on duty which might delay the completion of his account of the trip to *Spiti*.

Museum.

The skins of various birds (30 in number) brought forward at a previous meeting and forming a small part of Capt. PEMBERTON’s interesting ornithological collection from *Bhootan*, since stuffed and mounted in the museum, are now offered to the notice of the Society. Of these the following only have at present been identified.—

G. EVANS, Curator.

1. *Alcedo Guttatus*, (GOULD’S Cent.) Spotted Kingfisher.
2. *Cinclosoma Leucolophum*, (GOULD’S Cent.) Laughing Crow, LATH. male and female.
3. *Cinclosoma Erythrocephala*, (GOULD’S Cent.) Rufous-headed Thrush, male and female.
4. *Garrulus Bispecularis*, (GOULD’S Cent.) Almorah Jay, (GRAY.)
5. *Garrulus Striatus*, (GOULD’S Cent.) Striped Jay, male and female.
6. *Corvus Graculus*, (LINN.) Red-legged Crow, male and female.
7. *Corvus* ——— ? unidentified, male and female.
8. *Phœnicornis Princeps*, (GOULD’S Cent.) Caterpillar Catcher, male.
9. *Phœnicornis Miniata*, (SWAIN.) Caterpillar Catcher, male and female.
10. *Phœnicornis Peregrinu*, (GOULD’S Cent.) Caterpillar Catcher, male.
11. *Nucifraga Hemispila*, (GOULD’S Cent.) Nut-cracker, male and female.
12. *Bucco Grandis*, (GOULD’S Cent.)
——— *Barhut*.
13. *Enicurus Maculatus*, (GOULD’S Cent.) Spotted Wagtail, male and female.

Meteorological Register, kept at the Assay Office, Calcutta, for the Month of September, 1838.

Forenoon, 10 A. M.

Afternoon 4 P. M.

Day of the Month.	Atmospheric Pressure.		Temperature.			Hygrometry.		Aqueous tension.		Weather.		Atmospheric Pressure.			Temperature.		Hygrometry.		Aqueous tension.		Weather.						
	Old Stand. Barometer.	New Barom. at 32° Fah.	River water.	Well water.	Of air.	Wet-bulb Depression.	Differential Therm.	Hair Hygrometer.	by Dew-point.	by bulb.	by Hair Hygrometer.	Force.	Wind.	Aspect of Sky.	Old Stand. Barometer.	New Barom. at 32° Fah.	Of Air.	Dew-point.	Wet-bulb Depression.	Differential Therm.	Hair Hygrometer.	by Dew-point.	by bulb.	by Hair Hygrometer.	Force.	Wind.	Aspect of Sky.
1	29.645	29.727			81.4	75.0	4.0	3.0	82	83	80			sett. rain.	29.559	29.596	82.9	77.6	3.0	4.0	96	85	91	0.19	0.20	S. E. 3	s. rn. all day
2	7.331	7.214			55.4	78.6	4.2	4.6	76	81	82			cum. fine.	.623	.600	84.6	78.0	4.2	4.7	94	82	87			S. E. 1	sta. c. below
3	7.349	7.009			55.1	77.5	4.4	5.3	82	81	82			do. strat.	.555	.536	80.7	74.7	9.6	9.2	82	61	62			N. W. 2	c. d. o. st. do.
4	6.622	6.227			57.2	78.5	5.6	6.3	88	72	74			do. do. hazy.	.552	.493	88.0	76.0	10.5	13.4	82	59	61			N. W. 2	c. c. & st. h.
5	6.600	6.228			58.5	73.5	5.6	7.0	88	62	72			cldy. threatg.	.552	.495	86.9	77.3	6.1	5.8	92	70	75			N. W. 2	do. do. cldy.
6	6.338	6.033			57.4	77.3	5.9	7.4	89	76	76			cum. strat.	.537	.485	87.3	76.3	5.1	5.6	92	71	80			N. O. 3	cldy. dark
7	6.540	6.111			56.2	77.5	5.8	5.3	83	73	76			do.	.535	.494	87.5	77.2	5.2	5.7	92	72	80			E. 2	do. nimb.
8	6.620	5.977			57.3	77.6	5.5	6.4	91	74	77			cum. fine.	.513	.469	90.3	75.0	7.3	8.4	86	62	71			S. E. 2	cum. strat.
9	6.111	5.811			57.7	77.2	6.5	7.2	89	72	74			do.	.500	.453	90.9	77.0	7.9	7.8	87	63	70			S. E. 2	cum. strat.
10	6.591	6.276			57.0	79.0	4.9	6.0	93	73	80			cum. strat.	.499	.453	90.9	78.5	6.3	6.1	90	88	72			S. E. 2	cum. strat.
11	6.601	6.360			56.7	80.6	3.6	4.6	95	83	85			do. do. hazy.	.510	.470	83.0	77.2	4.9	5.4	92	83	79			N. W. 2	nb. & dr. c
12	6.656	6.155			58.2	75.0	3.0	4.5	96	82	83			drizzle.	.527	.487	84.4	78.0	4.4	5.1	93	82	81			S. E. 4	cldy. showy.
13	7.022	6.333	82.6	82.6	52.4	77.7	2.4	3.7	97	60	61			cldy. haze.	.629	.597	87.3	76.5	6.1	7.2	90	60	59			S. E. 5	rn. all day.
14	7.560	7.220	83.3	82.6	56.5	77.7	2.4	3.7	97	60	61			cumuli.	.653	.609	89.7	76.3	8.3	8.6	87	67	68			S. E. 5	nimb. cldy
15	7.811	7.335			56.6	77.5	5.5	6.4	92	73	77			do.	.668	.611	91.2	76.4	9.4	8.9	86	67	65			S. 1	cumuli.
16	7.609	7.269			56.8	77.5	4.6	5.7	92	75	81			cumuli.	.712	.679	85.7	78.5	4.6	5.0	93	80	80			S. 1	do. small.
17	7.372	7.032			57.7	78.0	5.2	5.8	91	75	80			do.	.664	.617	89.2	76.0	7.7	8.5	86	66	70			N. O	nimb. hazy
18	7.515	7.269			57.3	84.3	4.7	6.1	75	80	80			c. stn. above	.666	.635	85.1	78.0	4.4	5.3	92	78	81			N. O	strat.
19	7.737	7.333	84.8	83.7	57.0	77.1	5.8	7.1	89	70	73			do.	.669	.610	88.8	75.0	10.0	10.4	84	63	62			E. 0.1	do. nimb.
20	7.663	7.511			57.4	76.2	6.9	8.1	87	70	72			do.	.616	.566	90.9	76.5	1.6	9.0	86	63	67			S. 3	cl. n & dr. c.
21	7.745	7.022			53.3	79.0	2.7	4.8	96	88	87			cum.	.612	.548	90.7	77.0	8.9	8.6	86	65	70			S. E. 3	fine cl. cum
22	7.433	6.844			56.9	76.0	5.2	6.0	92	71	77			raining.	.632	.573	89.1	78.0	6.9	7.0	89	71	72			N. W. 1	do. from s. fine
23	7.398	6.657			57.3	76.4	5.7	6.7	90	71	77			do.	.632	.612	84.1	75.2	5.8	5.8	93	78	84			S. 2	showy ovt.
24	7.543	6.917			56.6	76.0	4.6	5.5	93	81	84			overcast.	.705	.670	78.0									N. 3	rain at intv.
25	7.754	6.911			56.6	76.0	4.6	5.5	93	77	81			cum. fine.	.706	.665	89.2									N. 3	rain at intv.
26	7.667	7.332			59.5									do.	.735	.700	91.8										
27	8.011	7.666			61.5									do.	.770	.735	81.0										
28	8.841	8.606			60.0									do.	.765	.730	91.9										
29	8.820	8.855			60.0									do.													
30					60.0									do.													
Mean,	29.721	29.686	87.1	83.5	65.6	77.0	5.0	5.8	92	75	79			29.620	29.685	87.5	76.9	6.5	6.9	89	72	73			5.03	5.05	var. in showy, hot.

Absence from Calcutta from the afternoon of the 26th to the end of the month prevented my registering observations for that period, but in order not to break the series of the two barometers and thermometer, I have filled these columns from the register of the surveyor general's office, using a constant correction derived from the preceding observations of the month.—1.

